

ENGAGEMENT IN HIV CARE DURING COMMUNITY REENTRY: A MIXED METHODS  
EXAMINATION OF INDIVIDUAL AND RELATIONAL CHALLENGES

By

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## ABSTRACT

### ENGAGEMENT IN HIV CARE DURING COMMUNITY REENTRY: A MIXED METHODS EXAMINATION OF INDIVIDUAL AND RELATIONAL CHALLENGES

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The domestic HIV epidemic remains a serious public health concern in the United States. The rate of HIV in prisons is three five times higher than the national average. The process of reentering the community after release from prisons places formerly incarcerated individuals at high risk of disengagement from HIV care. The purpose of the current study was to explore the factors that distinguish patterns in care engagement and disengagement over a 39-month period following release from prison. Using a socioecological framework, this project combined archival and interview data to investigate the impact of individual- and relational-level factors on these patterns. Rates of disengagement in this sample were very high, with only 17% of the sample consistently engaging in care. Non-engagers made up 30% of the sample and inconsistent engagers made up 50% of the sample. The accumulation of individual-level risk factors predicted engagement such that those with more individual-level risk were more likely to never engage or inconsistently engage in care when compared to consistent engagers. Poverty, history of substance use, and heterosexual identity were associated with non-engagement and inconsistent engagement. Consistent engagers were more likely to be satisfied with their patient-provider relationships than inconsistent engagers. The varied patterns of engagement suggest it is doubtful that there is a “one-size-fits-all” intervention for HIV care engagement for ex-offenders. Practitioners should tailor interventions to individuals’ specific needs.

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## TABLE OF CONTENTS

LIST OF TABLES .....	vii
LIST OF FIGURES .....	viii
INTRODUCTION .....	1
LITERATURE REVIEW .....	3
Understanding Engagement in Care: Disparities along the HIV Care Continuum .....	3
Community Reentry .....	7
Socioecological Framework .....	9
Individual-level Influences on Engagement in Care .....	11
Race .....	11
Income .....	12
Employment .....	12
Educational attainment .....	13
Comorbid health conditions .....	13
Transportation .....	14
Housing .....	14
Summary .....	15
Relational-level Influences on Engagement in Care .....	16
Social Support .....	16
Social support and health .....	16
Social support and HIV .....	17
Satisfaction with social support .....	18
Network size .....	19
Patient-provider relationships .....	19
Summary .....	21
CURRENT STUDY .....	23
METHODS .....	24
Mixed Methods .....	24
Archival data .....	25
Interviews .....	25
AIDS Partnership Michigan’s Community Reentry Program Evaluation .....	26
Participants .....	27
Sample .....	29
Procedure .....	30
Abstracting client records .....	30
In-person interviews .....	31
Determining incarceration status .....	31
Determining mortality status .....	31

Locating current addresses.....	31
Additional data sources .....	35
Michigan Department of Community Health CAREWare database .....	35
The Michigan State Police database.....	35
APM Record.....	36
Measures.....	36
Engagement in care.....	36
Missing data .....	38
Sexual orientation .....	38
Social support .....	38
Social support network size count .....	39
Support satisfaction score .....	39
Patient-provider relationship .....	40
Individual-level index .....	40
Educational attainment.....	41
Race.....	41
Income.....	41
Substance use history .....	42
Mental health history .....	42
Employment.....	42
Housing stability and satisfaction .....	42
Transportation .....	43
Scoring individual-level index .....	43
Analysis.....	44
RESULTS .....	46
Demographic Characteristics .....	46
Descriptive Characteristics.....	49
Indicators of individual-level risk.....	49
Indicators of relationship quality .....	49
Network size .....	49
Satisfaction with social support .....	49
Satisfaction with medical provider .....	49
Hypothesis Testing .....	52
Hypothesis 1.....	52
Hypothesis 2.....	52
Hypothesis 3.....	52
Hypothesis 4.....	53
Hypothesis 5.....	53
DISCUSSION .....	57
Patterns of Care Engagement .....	57
Factors that Influenced Care Engagement .....	59
Limitations .....	63
Implications for Research and Practice .....	65
Conclusion.....	68

APPENDICES .....	69
Appendix A: Individual-level Risk Index Validation Study .....	70
Appendix B: APM Abstraction Form .....	73
Appendix C: Eligibility Screening Instrument for Interviews .....	81
Appendix D: Interview Recruitment Materials .....	85
Appendix E: Interview Consent Form .....	90
Appendix F: Measures .....	92
REFERENCES .....	102

## LIST OF TABLES

Table 1. Demographic Characteristics of APM Reentry Program Clients .....	28
Table 2. Demographic Characteristics by Care Engagement (N=60).....	48
Table 3. Indicators of Individual-level Factors by Care Engagement (N=60) .....	49
Table 4. Indicators of Relationship Quality by Care Engagement (N=60).....	51
Table 5. Model 1: Hypothesis Testing with Three Outcomes .....	55
Table 6. Model 2: Hypothesis Testing with Two Outcomes .....	56

## LIST OF FIGURES

Figure 1. Health Resources and Services Administration continuum of HIV care, describing the spectrum of engagement in HIV care and levels of consistency in care engagement .....	3
Figure 2. Disparity along the HIV care continuum.....	4
Figure 3. Results of Iroh et al., (2015) study of HIV care before, during and after incarceration compared with the national average. Reprinted from “The HIV care cascade before, during, and after incarceration: a systematic review and data synthesis,” by P.A. Iroh, H. Mayo, A.E. Nijhawan, 2015, <i>American Journal of Public Health</i> , 105, p. e12.....	6
Figure 4. A socioecological perspective of HIV care engagement. Adapted from Mugavero, “The state of engagement in HIV care in the United States: From cascade to continuum to control. M.J. Mugavero, K.R. Amico, T. Horn, and M.A. Thompson, 2013, <i>Clinical Infectious Diseases</i> , 57, p. 1166.....	10
Figure 5. Development of Analytic Sample .....	28
Figure 6. APM Recruitment Flyer .....	89



## INTRODUCTION

The domestic Human Immunodeficiency Virus (HIV) epidemic represents a serious public health concern. Estimates suggest 1.2 million youth and adults live with HIV in the United States (Center for Disease Control and Prevention [CDC], 2015). Unfortunately, 14% are unaware of their condition (CDC, 2015). Even more alarming, our nation systemically fails to support and engage individuals in their HIV care.

“Engagement in care” or “care engagement” refers to a spectrum of patient care and disease management, from initial diagnosis of HIV to full commitment to care. The degree to which an individual is engaged in their HIV care can affect the manageability of the HIV infection (Gardner, McLees, Steiner, del Rio & Burman, 2011). Consistent engagement in care can lead to improved antiretroviral therapy (ART) adherence and achievement of viral suppression (Giordano et al., 2007; Mugavero, 2008). Viral suppression signifies the virus is undetectable and likely cannot be transmitted to others (Cheever, 2007; Gardner et al., 2011, Mugavero, Amico, Horn & Thompson, 2013; George et al., 2009). Inconsistent or lack of engagement in care can lead to further transmission of the virus or escalation of HIV infection to AIDS (Gardner, McLees, Steiner, del Rio & Burman, 2011; Giordano et al., 2007; Mugavero, 2008). Despite the benefits of engagement in care, only an estimated 40% of people living with HIV (PLWH) consistently engage (Mugavero, Norton & Saag, 2011; CDC, 2014; Althoff, et al., 2013; Bozzette, 1988; CDC, 2015).

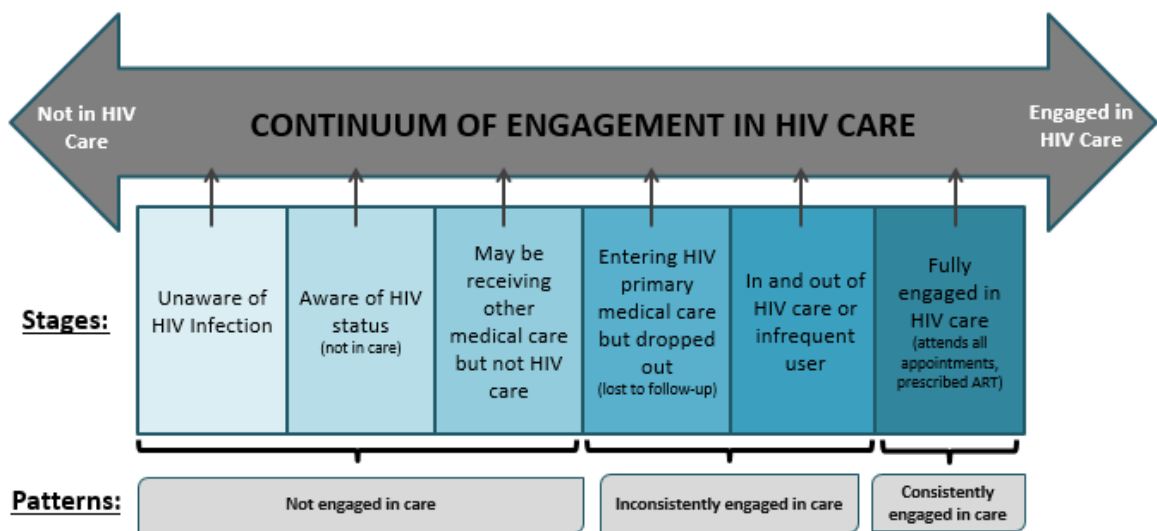
Certain populations have a lower likelihood of consistent care engagement, indicating a potential disparity in health outcomes (CDC, 2015). The rate of HIV in prisons is three to five times higher than the national average, placing formerly incarcerated individuals at high risk for disengagement from HIV care. (Baillargeon, et al., 2010; Bureau of Justice Statistics, 2002; Westergaard, Spaulding, & Flanigan, 2013; Brinkley-Rubinstein & Turner, 2013).

Every year, hundreds of thousands of inmates who receive healthcare and housing in prison reintegrate back into the community, many of whom have an HIV-positive diagnosis (Springer et al., 2004; Meyers, 2014; Springer et al., 2007). This process is generally referred to as reentry and typically represents the immediate months to 3 years after release from prison (Visser, La Vigne & Travis, 2004; Travis, 2005; Dhami Mandel, Loewenstein & Ayton, 2006). This time is especially critical for PLWH. In 1997, up to one-quarter of all people reentering into the community after release from prison were PLWH or AIDS (Hammett, Roberts & Kennedy, 2001). Despite this group's high risk for falling out of care during reentry, care engagement remains largely under-investigated. In order to address this gap in care engagement, we must understand the barriers and facilitators formerly incarcerated PLWH face to engaging in care post-incarceration. Consequently, my project focuses on identifying factors that distinguish individuals who consistently engaged in care from those who inconsistently engage in care, and from those who do not engage in care at all over the community reentry period following release from prison.

## LITERATURE REVIEW

### Understanding Engagement in Care: Disparities along the HIV Care Continuum

The continuum of HIV care (CoC) illustrates stages along the spectrum of engagement in HIV care (unaware of HIV infection, aware of HIV status, may be receiving other medical care but not HIV care, entering HIV primary medical care but dropped out, and fully engaged in HIV care) (AIDS, 2015; Eldred & Maltiz, 2007; Cheever, 2007). In Figure 1, I display a modified version of the continuum. The figure illustrates the stages along the spectrum of engagement as well as the different patterns of care engagement that correspond with each stage (non-engagement, inconsistent engagement, and consistent engagement in HIV care).



*Figure 1.* Health Resources and Services Administration continuum of HIV care, describing the spectrum of engagement in HIV care and levels of consistency in care engagement (adapted from Eldred & Maltiz, 2007).

The beginning stages indicate awareness of the HIV infection through receipt of an HIV test result. A positive HIV test should be followed by referral and linkage to an initial medical care visit with a health care provider (Hall, Tang, Westfall & Mugavero, 2013; Torian et al.,

2008). Subsequently, individuals should receive routine medical monitoring, also referred to as retention in care, and gain access to ART. Retention refers to the number of kept appointments and appropriate spacing between appointments over time (Mugavero, et al., 2013). Retention in care facilitates access to benefits beyond medical monitoring including prevention counseling and supportive resources (Hall, et al., 2012; Alberg et al., 2009). If an individual is retained in HIV care and adherent to treatment regimens, the virus can be suppressed.

Ideally, after receiving an HIV test, those who have HIV will immediately link to care, after which they will consistently attend medical appointments, receive and adhere to ART, and as a result, reduce their viral load. However, in reality, the HIV care continuum functions more like a leaky pipe where movement through succeeding stages steadily declines. Some PLWH stop care entirely or never begin in the first place (CDC, 2014; Eldred & Maltiz, 2007; Mugavero, et al., 2013). In the United States, 86% of PLWH are aware of their diagnoses, signifying they received an HIV test and a positive result (see Figure 2). However, only 40% of all PLWH are consistently engaged in HIV care. Furthermore, only 37% of PLWH are receiving ART, and merely 30% have achieved viral suppression (CDC, 2014).

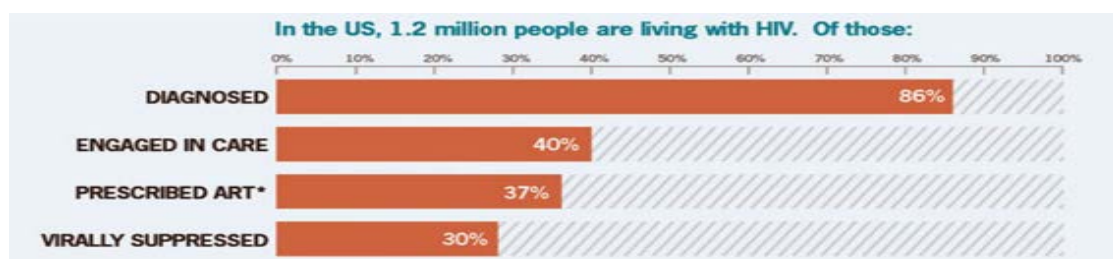


Figure 2. Disparity along the HIV care continuum (CDC, 2011).

In response to the need for increased engagement in care, The White House released the *National Strategy for HIV/AIDS*, the first comprehensive and coordinated effort the United States has taken on HIV (The White House, 2010). The strategy included three goals: reducing new infections, increasing access to care, and reducing HIV-related health disparities (The White

House, 2010). Furthermore, in July 2013, President Obama issued Executive Order No. 13,649 (2013) establishing the HIV Care Continuum Initiative, which prioritized addressing disparities along the continuum of care. Finally, in July 2015, The White House released an update to the original 2010 strategy focusing on providing support at all stages of the care continuum, particularly to specific populations at highest risk for falling out of care (The White House, 2015).

Although lack of engagement in care is undoubtedly a problem among the general population of PLWH, national averages mask disparities across the HIV care continuum among specific subgroups of PLWH (Hall et al., 2013). In a systematic literature review of 92 studies, Iroh, Mayo, and Nijhawan (2015) examined the HIV care continuum before, during, and after incarceration. As summarized in Figure 3, taken from Iroh et al., after release, rates of linkage to care, retention in care, and ART adherence significantly dropped. (Iroh, Mayo, & Nijhawan, 2015, p. e12). Consequently, viral suppression rates also fell after release. The graph also depicts the disparity in care engagement and treatment adherence for recently released PLWH compared with the general populations of PLWH.

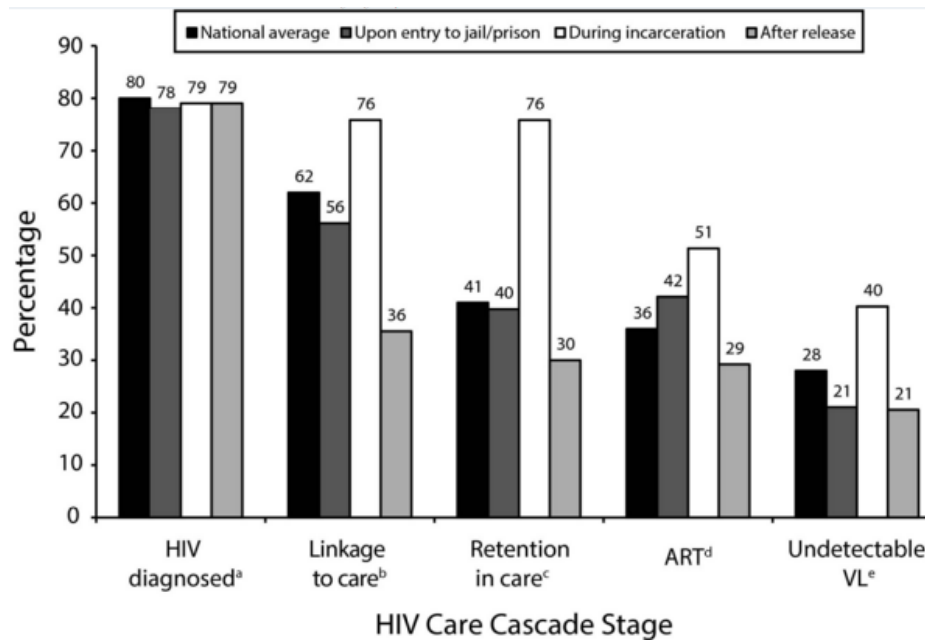


Figure 3. Results of Iroh et al., (2015) study of HIV care before, during and after incarceration compared with the national average. Reprinted from “The HIV care cascade before, during, and after incarceration: a systematic review and data synthesis,” by P.A. Iroh, H. Mayo, A.E. Nijhawan, 2015, *American Journal of Public Health*, 105, p. e12.

As noted in Iroh et al.’s (2015) study and other current literature, recently released PLWH have a harder time consistently engaging in care and exhibit increased viral loads as compared with currently incarcerated individuals (Stephenson, 2005; Palpeu et al., 2004; Wohl et al., 2011; Baillargeon et al., 2009). One possible explanation for this disparity is that the prison system permits easy access to medications as well as essentials for survival (e.g. food, housing), potentially resulting in better control of the virus (Springer et al., 2004; Meyer, et al., 2014 Springer, et al., 2007). Altice and colleagues (2001) found that approximately two thirds of inmates living with HIV are diagnosed for the first time in prison, suggesting that formerly incarcerated PLWH are not accustomed to interacting with HIV health systems in their communities. In a retrospective cohort study of all PLWH released from the Texas Department

of Justice prison system from 2004 to 2007, Baillargeon and colleagues (2009) found that within the immediate community reentry period (30 days of release), only about 20% of inmates had refilled their ART prescriptions. A better understanding of what drives these critical disparities during the reentry period is essential to addressing this disparity in HIV care engagement among formerly incarcerated PLWH. The following section reviews the difficulties that arise during community reentry.

### **Community Reentry**

Community reentry refers to the process through which formerly incarcerated individuals transition back into the general community. Reentry can refer to the immediate months after release up to 3 years, although most literature only tracks reentry for a few months (Visser, La Vigne & Travis, 2004; Travis, 2005; Dhimi Mandel, Loewenstein & Ayton, 2006). Regardless of HIV status, reentry can be physically, financially, and emotionally demanding (Richie, 2001). Formerly incarcerated individuals may reenter communities with little or no preparation for the demands of reentry, thus compounding challenges associated with successful reentry (Visser, Mallik-Kane, 2007; Hammett, Roberts & Kennedy, 2001). Upon release, formerly incarcerated individuals are expected to secure housing, obtain employment, reestablish relationships with family and friends, and gain access to other vital resources (e.g., personal identification, food stamps, substance use resources, transportation, mental health services) (Dennis et al., 2015; Brinkley-Rubinstein & Turner, 2013; Harlow, 2003; Richie, 2001; La Vigne & Mamalian, 2003; Petersilia, 2003). Oftentimes, securing vital resources must be accomplished while contending with little access to money, limited supportive relationships, low literacy skills, low self-efficacy, few transferable skills, and substance use and mental health disorders (Travis, Solomon & Waul,

2001). In addition to these challenges, formerly incarcerated PLWH face the added pressure to engage in HIV care immediately upon release.

Navigating healthcare systems serves as a continual challenge for formerly incarcerated PLWH, who face the burden of reestablishing care and medication access almost immediately upon release. At release, inmates receive only 30 days of their HIV prescriptions, leaving them roughly 1 month to find accessible care (e.g., new physician, new prescription) and identify resources to support their care and cover medical expenses (e.g., money for prescription and appointment co-payments, enrollment in insurance and benefit services). Completing reenrollment applications for these services can be a laborious and complicated process. Applications often consist of multiple steps, many of which require documents that formerly incarcerated PLWH may not have. The AIDS Drugs Assistance Program (ADAP) application, for instance, which provides low cost medications for PLWH, requires many forms including proof of residence, income (or lack of it), HIV status, and insurance (or lack of it). Prisoners may be released without accepted forms of proof of their identity and occasionally without proof of HIV status or medication needs, requiring they undergo HIV testing to confirm their status (Fontana & Beckerman, 2007). Procuring the proper documents to fill out forms may take months.

Many formerly incarcerated individuals lack the skills needed to navigate these complicated systems, particularly if these systems are brand new to inmates who were diagnosed while incarcerated. Literacy skills, for example, are substantially lower among incarcerated populations than the general public and can have profound implications (Petersilia, 2003). Formerly incarcerated PLWH need to be able to understand the healthcare system, fill out health forms, apply for benefits, and communicate adequately with physicians, all of which can be



stymied by low literacy skills. Moreover, formerly incarcerated individuals may lack the self-efficacy to make decisions related to employment, housing or health. While incarcerated, inmates are stripped of their autonomy and agency (Haney, 2003). The structured nature of the prison system limits them from making decisions related to finances, living conditions, and health (Katzen, 2013; Visser & Malik-Kane, 2007). As such, it may be difficult for formerly incarcerated PLWH to resume making these decisions upon release (Travis, 2001; Shinkfield & Graffam, 2010). Formerly incarcerated PLWH may also be too slow to advocate on their own behalf for rapid processing of ADAP, securing initial medical visits, and obtaining prescriptions (Laufer, Arriola, Dawson-Rose, Kumaravelu & Rapposelli, 2002; Hammett et al., 1998; Travis, 2001). Moreover, HIV health care navigation during reentry may be particularly challenging for those who have spent more time behind bars or are newly diagnosed and generally less familiar with the changes to healthcare services since their incarceration (e.g., technological advances, Affordable Care Act) (Katzen, 2013).

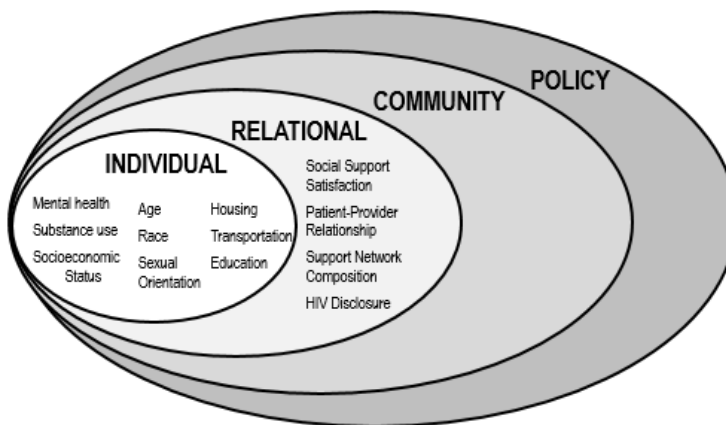
Taking all of these difficulties into consideration, the community reentry period is fraught with challenges to securing basic needs. These challenges are exacerbated for PLWH, as they must also manage their HIV.

### **Socioecological Framework**

This project employs a social ecological perspective to examine factors that distinguish individuals who consistently engage in care from those who inconsistently engage in care and those who do not engage in care at all over a 39-month period following release from prison. Examining factors associated with care engagement at multiple levels may explain care engagement disparities in this population.

A socioecological framework (Figure 4) helps conceptualize factors contributing to inconsistent or lack of engagement in care (Mugavero, Amico, Horn & Thompson, 2013; DiClemente, Salazar & Crosby, 2007; McLeroy, Bibeau, Steckler & Glanz, 1988). The framework illustrates dynamic interrelations among individual, interpersonal, community and structural factors, and their impact on an individual's ability to, in this case, adequately engage in HIV care (Bronfrenbrenner, 1979; Mugavero et al., 2013). Mugavero's (2013) adaptation of the socioecological perspective considers five levels of influence on engagement in care; of those five levels, the individual- and relational-levels are the focus of this project.

The limited literature on reentry challenges for PLWH suggest that individual and relationship-level factors can facilitate or hinder engagement in care. The literature also suggests that the individual- and relationship-level factors may interact to affect engagement in care. In the current project, I use the socioecological framework to frame the synergistic impact of individual and relational factors on engagement in care for formerly incarcerated PLWH.



*Figure 4.* A socioecological perspective of HIV care engagement. Adapted from Mugavero, “The state of engagement in HIV care in the United States: From cascade to continuum to control. M.J. Mugavero, K.R. Amico, T. Horn, and M.A. Thompson, 2013, *Clinical Infectious Diseases*, 57, p. 1166.

## Individual-level Influences on Engagement in Care

Individual characteristics impact the ease with which people reenter a community and engage in care. Racial minority status, poverty, unemployment, low educational attainment, the presence of co-occurring health conditions, housing instability, and lack of access to transportation are each associated with poor engagement in HIV care and ART nonadherence (Israelski et al., 2001; Traeger, O’Cleirigh, Skeer, Mayer, Safran, 2012; Giordano et al., 2003; Cargill, 2012; Torian et al., 2008; Ulett et al., 2009; Rebeiro et al., 2013; Hall, Gray, Tang, Shouse & Mermin, 2012; Mugavero et al., 2009; Pettus-Davis, Scheyett, Hailey, Golin & Wohl., 2009; Rajabiun et al., 2007; Wolf et al., 2007; Dennis, 2015; Brinkley-Rubinstein & Turner, 2013).

**Race.** Black individuals account for almost half of all new HIV infections every year (CDC, 2015), and have the highest imprisonment rates compared to people of other races (CDC, 2015; Bureau of Justice Statistics “BJS” 2014). Further, Blacks disproportionately experience gaps in care along the engagement spectrum (CDC, 2012; Mugavero, Amico, Horn & Thompson, 2013; Cargill, 2012). Studies consistently observe Black men experience delayed linkage to care (Toriano et al., 2008; Ulett et al., 2009), poor retention in care (Rebeiro et al., 2013; Hall, et al., 2012), increased likelihood of missing appointments (Mugavero, et al., 2007; Mugavero et al., 2009; Traeger, et al., 2012), delayed ART initiation and adherence (Giordano et al., 2010), and longer time to achievement of viral suppression (Hall et al., 2013). Approximately half of all PLWH are Black, a majority of whom are also young men who have sex with men (YMSM) (CDC, 2015). Black YMSM are least likely to know their HIV status, with more than half unaware of their infection (CDC, 2015). Among those who know their status, young Blacks are significantly less likely to be in care, adherent, or virally suppressed (CDC, 2010; CDC,

2014; Hall et al., 2014). These disparities are, in part, a result of systematic discrimination and racism historically experienced by Black communities (Delgado & Stefancic, 2012; Williams, 1999, Cooper & David, 1986).

**Income.** Income plays an important role in formerly incarcerated PLWH's ability to engage in their HIV care. Previous research finds low-income PLWH tend to miss more HIV-related healthcare appointments than their higher-income counterparts (Israelski et al., 2001; Traeger, et al., 2012; Giordano et al., 2003). Other studies have found that lacking adequate finances to secure basic needs also hindered patients' ability to engage in care (Dennis et al., 2015; Haley et al., 2014)

**Employment.** Unemployment contributes to an inability to secure basic needs required to consistently engage in HIV care (Dennis et al., 2015; Haley et al., 2014; Springer, Spaulding, Meyer, & Altice, 2011). Obtaining employment, however, is especially difficult for formerly incarcerated individuals, yet crucial to successful reentry (Petersilia, 2003). Employment aids in reentry by facilitating the development of life skills, financial stability, productivity, and social ties (Petersilia, 2003). However, while incarcerated, inmates are oftentimes unable to cultivate work histories or learn valuable skills necessary for most work forces and job applications (Schnittker & John, 2007). Former inmates may also experience prejudice in hiring due to their criminal histories. Living with HIV only exacerbates these challenges. PLWH have also historically experienced discrimination from employers in the work force (Malcolm, et al., 1998). Engagement in HIV care necessitates several doctors' appointments a year and potential side effects from ART medications can make it difficult to hold a steady job (Haley et al., 2014). Collectively, the literature suggests employment is crucial for consistent access to care, however formerly incarcerated PLWH face additional struggles in attaining employment, exacerbating

this challenge (Hall et al., 2013; Cargill, 2012; Rajabuin et al., 2007; Dennis, et al., 2015; Malik-Kane & Visher, 2008).

**Educational attainment.** Lower education and health literacy in PLWH has been associated with nonadherence to HIV medication, increased emotional distress, less social support, and increased barriers to accessing medical care (Wolf et al., 2007; Dennis et al., 2015; Kalichman, Catz, Ramachandran, 1999; Cargill, 2012). Wolf and colleagues (2007) found that PLWH with less than a high school education or who were functionally illiterate were least likely to be adherent to HIV medications and attend HIV care appointments.

**Comorbid health conditions.** Many formerly incarcerated PLWH leave prison with physical, mental health, or substance use conditions that can impact engagement in care (Traeger et al., 2012; Mugavero et al., 2013; Cashman et al., 2004; Rajabiun, 2007; Stephenson, 2005; Katzen, 2013; Mallik-Kane & Visher, 2008; Torian, 2008; Rebeiro, 2013, Ulett, et al., 2009). In fact, it is rare for former prisoners to have only one type of health condition. Approximately half of incarcerated individuals used substances prior to incarceration (Mumola & Karberg, 2004). Mallik-Kane and Visher (2008) found four in ten men reported multiple co-occurring physical, mental health, and substance use conditions during prisoner reentry. Thus, former inmates leave prison sometimes doubly or triply diagnosed with serious health conditions on top of HIV. These conditions alone may require specialized treatment and management (Mallik-Kane & Visher, 2008). Comorbid conditions may make it more difficult to acquire housing or employment and maintain interpersonal relationships (Mallik-Kane & Visher, 2008). Comorbid psychosocial health issues have also been associated with lower ART adherence and viral suppression (Blashhill et al., 2014; Friedman et al., 2015). Consequently, comorbid physical, mental health,

and substance use issues in PLWH may hinder engagement in care among formerly incarcerated individuals.

**Transportation.** Patients need to have reliable transportation to attend health care appointments. Lack of access to quality transportation is an often-reported hindrance to successful reentry, medical appointment attendance, and ART adherence (Dennis, 2015; Buchberg et al., 2015; Scheyett et al., 2010; Althoff et al., 2012). Althoff and colleagues (2012) found that formerly incarcerated PLWH who received transportation assistance were more likely to follow up on their post-release HIV medical appointments, suggesting that access to quality transportation can influence the likelihood of care engagement.

**Housing.** Securing safe and stable housing is one of the most difficult challenges post-incarceration for PLWH (Brinkley-Rubinstein & Turner, 2013; Haley et al., 2014; Visher, LaVigne & Travis, 2004; Petersilia, 2003; Clear, Rose, & Ryder, 2001; Rich et al., 2001). The National Alliance to End Homelessness estimated that homelessness rates in 2006 among recently released inmates in major urban areas was as high as 30-50% (National Alliance to End Homelessness, 2006). An estimated 3.4% of homeless individuals were PLWH, compared to 0.4% of adults and adolescents with HIV in the general population (CDC, 2008; National Alliance to End Homelessness, 2006).

Acquiring housing for certain subgroups of PWLH is particularly challenging. Current or former substance users, for instance, struggle to obtain housing because most low-income housing does not accept residents with drug-related criminal histories (Brinkley-Rubinstein & Turner, 2013; U.S. Department of Health and Human Services, n.d.). Sex offenders requiring lifetime registration may face additional parole stipulations. They are restricted from living within 1,000-2,000 feet of a schools or parks and are limited in their access to federally assisted

housing (Grubestic, Murray & Mack, 2011). Obtaining housing is especially difficult if former prisoners cannot return to the home of a spouse, partner, or relative and are released to the streets or a homeless shelter. Housing restrictions placed on sex offenders and substance users also apply to friends' and relatives' housing, further curbing housing opportunities. Applying for housing requires money for applications, deposits, and first months' rent, which many people may lack due to limited earnings during incarceration or due to post-incarceration unemployment.

Consequently, formerly incarcerated individuals may be forced to move to unstable neighborhoods not conducive to successful reentry or substance use recovery (Haley et al., 2014; Visher, LaVigne & Travis, 2004). These communities are often burdened by high rates of community unemployment, poverty, substance use, and are generally situated in resource-sparse areas with poor transportation (Hill, Ross & Angel, 2005). Further, these communities are not stable enough to support individuals reentering with HIV properly and thereby contribute to poor engagement in care (Petersilia, 2000; Rich et al., 2001; Arnold, Hsu, McFarland & Rutherford, 2009; Shacham, Lian, Onon, Donovan & Overton, 2013; Latkin, German, Vlahov & Galea, 2013).

## **Summary**

Current literature provides ample evidence of the relationship between individual-level factors and lack of engagement in care. What remains to be understood is what happens when an individual is burdened by several individual-level challenges. Few studies have investigated how care engagement is impacted by an accumulation of risk factors. This accumulation of individual-level risks may be more important in predicting care engagement than any specific individual-level risk alone. I propose to examine the additive effect of individual-level risk

factors' impact on engagement in care. The current study examines the impact of a composite individual-level risk score on engagement in care. I expect consistent engagers to have lower individual-level risk scores than inconsistent and non-engagers.

### **Relational-level Influences on Engagement in Care**

Relationships can be a critical source of support and motivation for PLWH (Pierce, Sarason & Sarason, 1996). Absence of or stress within relationships can hinder PLWH's ability to stay engaged in care (Galvan, Davis, Banks & Bing, 2008). The role of supportive relationships in promoting engagement in care among formerly incarcerated PLWH remains relatively unexplored.

### **Social Support**

Social support encompasses the delivery or exchange of social resources, actual or perceived (Cohen, Underwood & Gottlieb, 2000). Social support benefits PLWH directly and indirectly. Directly, social support can influence the adoption of behaviors and social norms, healthy or unhealthy (Cohen & Syme, 1985). Indirectly, social support can buffer the negative effects of stressful life events (Cohen & Wills, 1985).

**Social support and health.** There is an extensive literature demonstrating the positive influence of social support on health (House et al., 1985; Gallant, 2003; Cohen & Syme, 1985). Empirical evidence links perceived social support to improved mental and physical health, positive outlook, coping skills, and the ability to handle stressful life events. A lack of perceived social support is associated with depression and psychological impairment during stressful life events (Pierce, Sarason & Sarason, 1996; Serovich et al., 2001); Galvan, Davis, Banks & Bing, 2008). Cohen & Wills' (1985) classic work on social support demonstrated the association between health and support. Social support may be of particular importance to formerly



incarcerated PLWH, as they experience an increased amount of stress associated with the practical and psychological aspects of reentry and HIV care management.

**Social support and HIV.** Never-incarcerated PLWH perceive social support from family and friends as critical to HIV stress management and survival (Alfonso et al., 2006; Rajabuin, 2007; Edwards, 2006; Knowlton, Hua & Latkin, 2005). A strong network of relationships facilitates engagement in HIV care (Kelly, Hartman, Graham, Kallen & Giordano, 2014; Alfonso et al., 2006; George et al., 2009; Edwards, 2006; Giordano et al., 2007; Catz, Kelly, Bogart, Benotsch & McAuliffe, 2000; Byrgoyne, 2005; Hagedoorn et al., 2000; DiMatteo, 2004). The general social support literature does not, however, provide a sense of how social support affects care engagement for groups prone to atypical social interactions and networks (Rajabuin et al., 2007; Catz, et al., 2001; DiMatteo, 2004; Simoni, Mason & Marks, 1997; Edwards, 2006; George, et al., 2009).

Dennis and colleagues' (2015) qualitative study of reentry for PLWH found social support to be one of the most crucial facilitators of successful HIV care engagement and reentry. At a personal and institutional level, social support was considered instrumental in helping respondents manage their HIV and navigate the reentry process. Similarly, Pettus-Davis and colleagues (2009) utilized a social support framework to examine the role of social support in post-release plans for prisoners living with HIV. Participants discussed barriers they would face upon leaving prison (e.g., housing, employment, criminal history, stigma, restrictions) and expected social support to be essential in overcoming these barriers. The majority of participants acknowledged the importance of informational and instrumental social support and interpersonal relationships, employment, and faith-based communities in managing their HIV care. Some participants thought having at least one supportive person in their networks could aid in avoiding

substance use and other negative outcomes. Other participants anticipated little or no social support upon release. Many participants also thought their HIV status would be a significant barrier to achieving a normal life with friends and family.

**Satisfaction with social support.** Maintenance of supportive relationships is not easy in the best of circumstances. The process may be severely strained by incarceration and reentry (Alexander, 2012; Baillargeon et al., 2009). Incarceration of any length can disrupt important relationships due to distance and a lack of regular communication and intimacy (Schnittker & John, 2007; Rindfuss and Stephen 1990; Wheeler 1961). Incarceration can produce shame, anger, and mistrust, further straining relationships with social networks (Hagan and Dinovitzer 1999; Braman 2004; Schnittker & John, 2007). The social costs of incarceration can affect entire communities (Roberts, 2004). Removing key family members, partners, friends, or parents from a social network can negatively influence those who depended on them as key support members (Harawa & Adimore, 2008). Loved ones may lose important financial or emotional resources necessary for day-to-day living and suffer as a result. Therefore, upon reentry, loved ones may hold negative attitudes toward or feel ambivalent about former inmates.

In other cases, formerly incarcerated PLWH might return to the relationships that contributed to their initial incarceration and that could be detrimental to their successful reentry. Indeed, former inmates sometimes prefer to avoid this possibility by establishing new relationships in different communities or enduring the hardships of social isolation rather than take up old relationships upon release (Schnittker & John, 2007). Dennis and colleagues (2015) found many formerly incarcerated PLWH reentering into the community returned to an environment full of alcohol and drugs, negatively impacting their ability to adhere to ART medications. Overall, although social networks are present, individuals may not be satisfied with

those networks' positive contribution to HIV care. In this study, I expect consistent engagers to be more satisfied with support received than inconsistent and non-engagers.

**Network size.** Research findings are not yet clear about whether there is an optimum network size or composition for supporting PLWH in care engagement (Schaefer, Coyne, & Lazarus, 1981). Support networks can be of various sizes and can come from sources inside or outside of family, friends, and partner networks (Lewin, 2000; George et al., 2009). Two studies suggest large social networks may better aid in health care management (Semple, 1996; McDowell & Serovich, 2007). In this study, I expect consistent engagers to report larger networks than inconsistent and non-engagers.

**Patient-provider relationships.** One key support member of a well-functioning network for PLWH are HIV care providers. Patient-provider relationships are of critical importance for PLWH, as maintenance of HIV requires long-term biomedical treatment (including approximately two to three visits a year) (Mugavero et al., 2013; McCoy, 2005). As such, the quality of patient-provider relationships for formerly incarcerated PLWH may influence engagement in care.

Relevant literature on never-incarcerated PLWH consistently finds that patients want to feel supported by their provider in their HIV care. Positive relationships with providers increase the likelihood of medication adherence (Rajabiun et al., 2007; Laws, Bradshaw & Safren et al., 2011; George, et al., 2009; Bakken et al., 2000; Cederfjall et al., 2002; Preau et al., 2004; Roberts, 2002; Schneider, Kaplan Greenfield & Wilson, 2004), while more contentious patient-provider relationships are associated with reduced adherence (Roberts, 2002). Formerly incarcerated PLWHs' likelihood of encountering a contentious relationship may be higher due to their individual characteristics such as substance use, medical distrust, stigma, and stress. There

is also evidence to suggest physician bias against HIV positive injection-drug users, patients of belonging to ethnic or racial minorities, and patients of low SES (O'Connor, 1994; Gerbert, Maguire, Bleecker, Coates & McPhee, 1991; Wong et al., 2004; King et al., 2004).

In a qualitative study, Rajabiun et al., (2007) investigated the process of engagement in care in never incarcerated PLWH through in-depth interviews, finding those who were not stably in care reported more negative experiences of health care providers than those with stable engagement patterns. Unengaged participants disliked when providers exercised control over health decisions without considering their experiences or needs. In addition, patients felt providers' attitudes or behaviors served as an obstacle to engaging in HIV care. By contrast, participants who consistently engaged in care reported positive relationships with their providers, which they valued.

Appointment aversion is common when patients perceive negativity or judgment from providers (George et al., 2009; Fontana & Beckerman, 2007). For example, McCoy (2005) found those who were socially or economically marginalized were more likely to describe issues with providers, such as being seen too briefly, pressured to take ART meds, or not receiving information in an intelligible way (McCoy, 2005). Dennis and colleagues' (2015) report previously incarcerated participants felt stigma surrounding their incarceration record and HIV status, and this stigma contributed to negative experiences with providers and reluctance in attending appointments and adhering to medication. These patient-provider dynamics were also influenced by health insurance status; people who lacked health insurance reported limited access to supportive and respectful providers. Poor patient-provider relationships may explain some of the disparity along the spectrum of engagement for formerly incarcerated PLWH. In this

study, I expect those consistent engagers to report greater satisfaction with medical providers than inconsistent engagers

Taken together, relevant literature suggests social support facilitates engagement in care while lack of social support hinders engagement in care. Formerly incarcerated PLWH face unique barriers to reconnecting with support systems and maintaining optimal support systems to aid in their HIV care. Satisfactory social support and positive patient provider relationships may ease individual-level challenges. Understanding supportive relationships and the impact they can have on engagement in care is crucial to addressing the HIV epidemic among formerly incarcerated individuals.

The bulk of previous work in this field has largely focused on individual challenges. The few studies that do examine relational challenges have been qualitative in nature. These studies suggest that the relationships formerly incarcerated inmates keep may affect their access to vital individual-level resources such as employment, transportation, money, and housing (Dennis et al., 2015; Haley et al., 2014). Due to the complexities of incarceration and reentry, it seems that ex-offenders may also rely on support networks more than the average individual to re-adjust and reintegrate back into the community after release (Visser, Mallik-Kane, 2007; Hammett, Roberts & Kennedy, 2001). This has implications the importance of relationships in care engagement. Given what qualitative research has found about relationships in this population, I expect relationship factors to explain more variance in care engagement patterns than individual-level factors.

## **Summary**

The relevant literature suggests that formerly incarcerated PLWH may experience challenges because of their specific needs at the time of reentry. Reentering PLWH must manage

co-occurring individual-level challenges that can impact their ability to consistently engage in care. In addition, they may experience trouble reconnecting with support networks and building relationships with HIV care providers, which can be vital assets to successful reentry and consistent HIV care engagement. The limited literature on reentry challenges for PLWH suggests that individual- and relational-level factors facilitate or hinder engagement in care. Most research examines either specific individual factors or specific relationship variables. Rarely are these examined simultaneously. In the current study, I use the socioecological framework to examine the synergistic impact of individual and relational factors on engagement in care for formerly incarcerated PLWH.

## **CURRENT STUDY**

This project will contribute to the care engagement literature in the following ways. First, this study adds to the literature by examining formerly incarcerated PLWH at 39 months since release from prison. This population remains under-investigated and at high risk for poor engagement in care. Few studies have examined engagement in care beyond the initial months following release from prison. Second, engagement in care is dynamic. This study explored three engagement patterns: 1) no engagement in care, 2) inconsistent engagement, and 3) consistent engagement in care. Finally, this study adopts a socioecological perspective, which has the potential to elucidate mechanisms that may explain the multilevel nature of factors that impact on engagement in care.

The following hypotheses guided my investigation:

Hypothesis 1: Those who are consistently engaged in care will have significantly lower individual-level risk scores as compared to those who are inconsistently engaged and those who are not engaged in care.

Hypothesis 2: Those who are consistently engaged in care will report larger social networks than those who are inconsistently engaged and those who are not engaged.

Hypothesis 3: Those who are consistently engaged in care will report greater satisfaction with the support they receive as compared to those who are inconsistently engaged and those who are not engaged.

Hypothesis 4: Those who are consistently engaged in care will report greater satisfaction with providers as compared to those who are inconsistently engaged in care.

Hypothesis 5: Relationship factors will explain more variance in care engagement patterns than individual-level factors.

## **METHODS**

The purpose of this study was to improve the field's understanding of engagement in care and factors that influence engagement in care for formerly incarcerated individuals living with HIV. I used mixed methods as the methodological approach to investigate this complex topic.

### **Mixed Methods**

Rooted in pragmatism, mixed methods research uses multiple methods to make sense of the social world (Tashakkori & Teddlie, 1998; Johnson & Onwuegbuzie, 2004). Mixed-methods are useful when one method insufficiently captures multiple facets of a phenomenon (Creswell & Clark, 2011). Mixed-methods research capitalizes on the strengths of multiple methods for purposes of complementarity (Greene, 2007). Complementarity allows researchers to dissect multiple dimensions of a phenomenon by combining different methods to provide a broader understanding of one topic (Greene, 2007).

This project examined a tremendously complex social phenomenon—engagement in HIV care during the community reentry period post incarceration—as it is experienced by a poorly understood population, previously incarcerated PLWH. As such, multiple complementary methods can deepen our understanding of reentry and engagement in HIV care, multiple complementary methods are necessary. For example, a primary goal of this project was to gain a multi-level understanding of the challenges PLWH face when engaging in care post-incarceration. Complementary methods provided me with diverse insights into these multiple ecological levels, which is especially important in a population that is overlooked in research (Dennis et al., 2015; Haley et al., 2014). Little is known about previously incarcerated individuals and even less about previously incarcerated individuals living with HIV. This population is often difficult to incorporate into community-based research due to the transient



nature of their lifestyles, stigma, institutional distrust, and constant cycling in and out of incarceration. Utilizing multiple methods allowed for the combination of complementary sources to create a simultaneously broad and deep picture of PLWH.

Mixing two methods, such as interviews and archival data, can enhance a study by offsetting the weaknesses from one method with the strengths of the other method; they compensate for each other (Creswell & Clark, 2011; Patton, 2002; Marshall & Rossman, 1989). In this project, I integrated archival data and interview data. Although archival data are invaluable in the context of health research, they fail to tell a complete story. Archival data provided an important record of each individual's life (e.g., medical, criminal), while interview data provided context to these records. Mixing methods in this way allowed me to gain a richer understanding of a population that is underrepresented in the literature (Creswell & Clark, 2011).

**Archival data.** The use of archival data has become increasingly popular among researchers as it offers economical and methodological advantages (Webb & Campbell, 2000; Boslaugh, 2007; Vartanian, 2010). Archival data refer to documents or records that provide a large, rich source of information (Patton, 2002; Hodder, 2000). Specifically, in health research archival data may consist of client records from service providers that offer a unique perspective on health and represent information that is challenging, if not impossible, to obtain through self-report (Boslaugh, 2007; Patton, 2002). Client records are particularly useful for the proposed project to examine variables including HIV-related health status, criminal histories, mental health, and place of release.

**Interviews.** The purpose of interviewing is to capture a participant's knowledge and perspective (Patton, 2002). Interviews provide an opportunity to discover information about individual's perceptions and experiences in their own words (Patton, 2002; Oakley, 1988). In this

study, semi-structured in-person interviews were conducted to examine feelings, behaviors, and experiences of people living with HIV post-incarceration.

Semi-structured interviews follow a standardized interview guide; however, the interviewer has the freedom to probe or follow up on any topic throughout the interview (Patton, 2002; Singleton & Straights, 2010). Consequently, semi-structured interviews are ideal for situations in which it is unlikely the researcher will get the chance to interview the population again. One advantage of semi-structured interviews is that they allow flexibility to explore unanticipated topics. In this project, this flexibility was especially important, as there is a dearth of information on this population. In addition, previously incarcerated PLWH are generally very transient and researchers must go to great lengths to locate and recruit the participants. Finally, interviews serve as a space for researchers and participants to engage in an emotionally safe dialogue (Campbell, Sefl, Wasco & Ahrens, 2004). Researchers have noted that qualitative interviews provide a rare opportunity for the participant to talk freely about experiences and receive validation (Wilson & Wilson, 1994; Campbell, et al., 2004).

### **AIDS Partnership Michigan's Community Reentry Program Evaluation**

This study used data from the AIDS Partnership Michigan's (APM) Community Reentry Program Evaluation. The APM project evaluated long-term effectiveness of the APM Community Reentry Program. The purpose of the Community Reentry Program is to link HIV-positive people to medical case management prior to their release from prison, which should help link clients to medical care and other AIDS-related services after release.

The evaluation consisted of telephone interviews with case managers and physicians and in-person interviews with clients. Archival data were also obtained for the evaluation from: APM program records, The Michigan Department of Community Health's CAREWare database, The

Department of Corrections database (OTIS), The Michigan State Police database (ICHAT), the state insurance registry, the Social Security Death Index, and The Michigan Drug Assistance Program's (MIDAP) records. This study analyzed a subset of these records to examine factors that influence patterns of care engagement for formerly incarcerated people living with HIV.

## **Participants**

The larger evaluation study examined the post-release experiences of 190 former inmates living with HIV who used the APM community reentry program. For the purposes of the current study, I focused only on those who completed in-depth, in-person client interviews with the APM evaluation team (n=60). The demographics of both the original APM evaluation sample and the sample included for the current study are displayed in Table 1. In the tables, transgender individuals are included as male or female, based on their lived gender identity. Race was collapsed into "Black/Mixed" and "White". As shown, there were no significant differences between clients who completed an interview and clients who were not interviewed.

Table 1.

*Demographic Characteristics of APM Reentry Program Clients*

	Primary Study (N=190)	Analytic Sample (n=60)	Chi-Square (X <sup>2</sup> )
	n(%)	n(%)	
<b>Gender</b>			.0045
Male	184 (96.8)	58 (96.7)	
Female	6 (3.2)	2 (3.3)	
<b>Race</b>			.181
Black/Mixed	157 (84.4)	53 (86.7)	
Other	29 (15.6)	7 (13.3)	
<b>Ethnicity</b>			.6163
Not Hispanic	181 (96.2)	59 (98.3)	
Hispanic	7 (3.7)	1 (1.7)	
<b>On Parole</b>			1.5667
Yes	23 (21.1)	11 (31.4)	
No	86 (78.9)	24 (68.6)	
<b>Absconded from Parole</b>			1.1954
Yes	9 (8.3)	1 (2.9)	
No	100 (91.7)	34 (97.1)	
<b>History of Mental Illness</b>			.161
Yes	60 (32.8)	18 (30.0)	
No	123 (67.2)	42 (70)	
<b>History of Substance Use</b>			.0796
Yes	139 (73.2)	45 (75.0)	
No	51 (26.8)	15 (25.0)	
	<b>Average (Range)</b>	<b>Average (Range)</b>	<b>t-test</b>
<b>Age</b>	47.64 (27-68)	48.17 (31-68)	0.445
<b>Length of Incarceration</b>	5.18 (0.25-30)	6.17 (0.50 -30)	1.256

## Sample

The primary study took a census of all people who were enrolled in the APM Community Reentry program between May 2003 and May 2008 ( $N=190$ ). This timeframe was chosen so that each client would have had the opportunity to receive care for at least 36 months' post release. The analytic sample is the subset of former clients who participated in client interviews with the APM evaluation team ( $n=60$ ). To be eligible to participate in the client interviews, clients had to: 1) be located by the APM evaluation team (i.e., not incarcerated, alive, and residing in Michigan) and, 2) agree to be interviewed by the APM evaluation team. Figure 5 depicts how the final sample was developed.

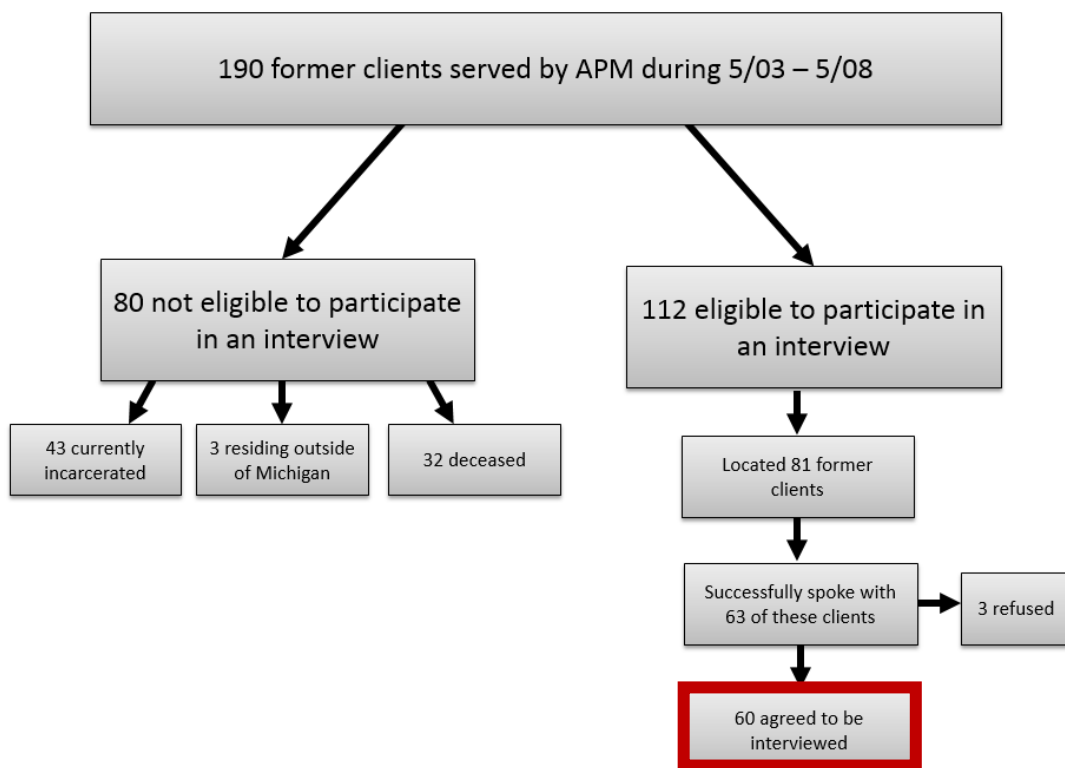


Figure 5. Development of Analytic Sample.

## Procedure

The APM Community Reentry Program evaluation was comprised of several steps: 1) abstraction of client records; 2) location of former clients for in-person interviews; 3) recruitment of former clients for in-person interviews; 4) screening of former clients for in-person interviews; 5) in-person client interviews; and 6) receipt of customized additional data sources. Each step will be explained in detail in the following section.

**Abstracting client records.** The evaluation team sent researchers to APM in Detroit, Michigan to abstract data from the client records of those who received APM services between the dates of May 2003 and May 2008. To identify these clients, the team searched all APM program files for unduplicated clients enrolled during the specified time-period.

During the APM data abstraction, the evaluation team followed standardized procedures to ensure clients' confidentiality and the safe transportation of documents. A standard data abstraction form was designed to aid data collection. The form was pre-printed with randomly generated ID numbers. The first page included descriptive client information such as name, demographics and contact information. The pages that followed included HIV status, housing, legal, and other health information. The first page containing the identifying information was immediately detached from the other client information and stored separately in a locked box. All abstracted data were then transported to Michigan State University. Data were immediately transferred to locked file cabinets and stored in locked offices with restricted access. Data were entered into a password-protected file on a secure network. The list linking data to names was not destroyed immediately, enabling the evaluation team to match the data to all other data they would collect.

**In-person interviews.** After identifying which clients received APM services during the specified period, the evaluation team sought to locate these persons for in-person interviews.

***Determining incarceration status.*** In order to determine whether or not former clients had been re-incarcerated, the evaluation team accessed OTIS. OTIS is a public record of offender information including parole, probation, and current incarceration data. The database only displays information for the offenders under the jurisdiction of the Michigan Department of Community Health (MDOC) within the last 3 years. The evaluation team used this database to determine which clients were re-incarcerated and therefore could not participate in the in-person interview ( $n=43$ ).

***Determining mortality status.*** Public vital record searches were used to determine which clients were deceased and therefore unable to participate in an in-person interview ( $n=32$ ). First, the evaluation team needed to obtain known aliases of the clients. To do so, the evaluation team accessed the ICHAT database. This database includes felony and misdemeanor crimes punishable by 93 days or more, parole, probation, sentencing, and known alias information. The majority of former clients had an ICHAT Record ( $n=180$ ). Mortality status was obtained from The Social Security Death Index. Social security numbers for the former clients were selected from the APM records. The Social Security Death Index contains data on deceased individuals in the United States. Causes of death were confirmed through the Michigan Department of Community Health, when possible. The Michigan Department of Community Health conducted a search on AIDS-related deaths using the list of deceased individuals provided by the evaluation team.

***Locating current addresses.*** Once a list of clients who were living and not incarcerated was established, the evaluation team took steps to locate these clients. To begin locating clients,

the evaluation team pulled addresses from the abstracted APM records. The records included the address to which the client was released post-incarceration and addresses of any relatives or friends to whom the client gave APM permission to contact.

The evaluation team sent 463 letters to former clients, friends, and relatives using the addresses in APM records to recruit eligible clients to the in-person interview. If an address was to a shelter or institution, no letter was sent. Letters included discretely worded information about the study, a toll-free number to call, and a business card. One hundred and two of these letters were returned, indicating a wrong address.

To obtain better addresses for the 102 returned letters, the evaluation team used four other locating records: Michigan's PSOR, MIDAP, and Michigan's insurance database. First, the evaluation team conducted a search on Michigan's PSOR. This databased contained names, demographics, and address information for individuals convicted of a sex-related crime. The evaluation team used this database to locate clients who had been convicted of a sex-related crime ( $n=12$ ).

Since many former APM clients enrolled in MIDAP for HIV medication assistance, the evaluation team requested the last updated address of individuals registered to receive MIDAP benefits. This database records information for all persons who qualify to receive HIV-related medication assistance. The evaluation team made the same request for those registered for state insurance benefits. The evaluation team also paid to use a database that searches utility records for the last known addresses of a client and all relatives named in their APM record. Phone calls were also made to the last known phone number of clients and their relatives.

If a client could not be reached by the above strategies, the evaluation team contacted parole officers (for those still on probation or parole) and requested they disseminate the letter to



parolees with whom they still had contact. For those clients who were still known to use APM services, a letter was distributed to them by APM caseworkers. The evaluation team also sent out posters to drug treatment facilities with information about the study. Finally, as a last resort to locate addresses, the evaluation team requested public driver's license records through Michigan Secretary of State Driver's Records, if none of these other sources produced an address. Through these methods, the evaluation team could find usable addresses for 81 of the 112 former clients who were eligible for an interview. For clients whose letters were not returned and who did not call the evaluation office ( $n=25$ ), the evaluation team made home visits. At home visits, the evaluation team left business cards or spoke with a resident. The evaluation team successfully spoke with 63 of clients; 3 refused an interview.

Prior to scheduling the interviews, all former clients who agreed to participate went through a screening process that confirmed individuals' identity. The evaluation team prepared a screening instrument containing questions that would allow them to be confident they were interviewing the former client to whom they intended to speak. The screening instrument included questions about incarceration (e.g., years, prison name, release date), demographics (e.g., name, date of birth) and the last 4 digits of their social security number. Interviewers then compared the answers to data abstracted from APM records to verify callers' identities. Only after identities were verified did the team reveal the nature of the interview.

In-person interviews were conducted and audio recorded at a place and time convenient to the participant. The interviews lasted 50 to 210 minutes (100 minutes, on average). Participants were given several breaks during the interview. The interview addressed experiences with APM intake and case management services, services received at time of release, social support, experiences with medical providers, experiences living with HIV, risk and protective

behaviors, employment, housing, and current health status. The interview used recall prompts such as calendars to aid participants' memory. Although the interview was structured, interviewers conducted the interview as semi-structured, allowing participants to speak freely. If the participant displayed misinformation about a topic, suggesting that they did not understand their disease or how to access available services, an educational intervention followed the completion of the interview. All participants were provided with referrals to additional services, if needed. Participants were paid \$50 for participating in the interviews.

Due to the sensitive nature of the data needed for this evaluation, extensive measures were taken to protect client's confidentiality in the collection and maintenance of all data sources. All former APM clients signed a HIPPA waiver at intake to allow their health information to be accessed for the purposes of a program evaluation. In addition, the entire evaluation team signed a confidentiality agreement.

The evaluation team made efforts to minimize risk for clients participating in the in-person interview. To protect participants from signing their name to a document with the study description, which revealed the study is examining PLWH, the evaluation team applied for and received a waiver of documentation of consent. In addition, when providing incentives and reimbursing for interviews and home visits, the evaluation team received an exception so that a participant's signature was not required and the exact address of the participant's home was not disclosed.

After the different data sources were obtained and linked, each participant's random identification code replaced their name to protect their confidentiality. Identifying information was destroyed after the client interviews. All data were stored in locked files on password protected computers and networks. Audio recordings were immediately removed from the digital

recorders and saved onto a secure network with password protection for transcription. Audio from the client interviews was transcribed verbatim and transcripts were de-identified. Data collection procedures for the evaluation were reviewed and approved by Michigan State University's Social Science and Education Institutional Review Board.

**Additional data sources.** Additional data sources were created by the evaluation team to examine former clients' health and criminal history. These data sources were used in the current study to examine factors impacting HIV care engagement.

***Michigan Department of Community Health CAREWare database.*** The evaluation team requested CAREWare data from MDCH. The CAREWare database tracks Ryan White-funded services provision to persons living with HIV in Michigan. CAREWare is a national software program distributed by HRSA. The database contains medical records including lifetime history of CD4 counts, viral loads, and STI test results. MDCH created a customized database for the evaluation team by hand-searching for CAREWare records with the name and social security numbers of former clients abstracted from the APM. In sum, 119 former clients had health-related data in the CAREWare database, and 70 of those clients had CAREWare data for 3 or more years after receiving services from APM.

***The Michigan State Police database.*** The evaluation team used ICHAT to create a database containing client aliases, criminal histories, and other information necessary to locate clients. The database includes felony and misdemeanor crimes punishable by 93 days or more. The database also includes parole, probation, and sentencing information. The majority of former clients had an ICHAT Record ( $n=180$ ).

**APM record.** Data abstracted from APM client records included basic demographics, residential status, anticipated needs, HIV health information, mental health history, substance use history, and final case disposition ( $n=190$ ).

## **Measures**

Only measures pertinent to the current study are described.

**Engagement in care.** Engagement in care was measured as one variable with three levels: never engaged in care, inconsistently engaged in care, and consistently engaged in care. In this project, presence of a viral load or CD4 test, obtained from the CAREWare database, served as a proxy for kept medical care visits, a common measure of retention in care (Mugavero et al., 2013). The CAREWare database includes viral load and CD4 test information for 52 of the 60 former APM clients.

There are several widely-used measures of retention in care. The most common measures examine missed appointment visits, appointment adherence, visit constancy, and gaps in care (Mugavero et al., 2012; Baligh et al., 2012). Recent reviews of retention measures have established that there is currently no gold standard for measuring retention in care with each measure having specific advantages and limitations (Mugavero et al., 2012; Baligh et al., 2012). Decisions to use a specific retention measure depend on the availability of data and the goals of the research (Mugavero et al., 2012; Baligh et al., 2012). This project measured retention in care based on the HRSA medical visits performance measure, which considers patients retained in care if they attend two or more visits with their medical care provider in a 12-month period with greater than 3 months between visits (Mugavero et al., 2012; Hall et al., 2012; HRSA “HAB Core Clinical Performance Measures for Adult/Adolescent Clients”, 2008).

To calculate how and when former clients received CD4 or viral load tests, I took the APM enroll date and determined 3-year period following their APM enrollment. To do this, I calculated 12-month intervals for each participant who had a record of a CD4 or viral load test during the 3-year period. Any tests that did not fall into the designated time-period were filtered out. Therefore, if a client had two or more CD4 or viral load tests in every 12-month period with 3 or more months between each test, they were classified as “consistently engaged in care”. If a client had no CD4 or viral load tests within 3 years of his APM enroll date, the client was classified as “not engaged in care”. All other clients were classified as “inconsistently engaged in care”.

Following the HRSA definition exactly, only 10% of the sample (6 respondents) would have been considered consistently engaged in care, which is extremely low compared to previous literature. Therefore, given that the HRSA performance measure is typically meant to only measure 1-year intervals of retention and has been critiqued for being too rigid in certain samples, I chose to slightly adapt the measure for this project (Mugavero et al., 2012; Baligh et al., 2012). Rather than looking at exactly 3 years, I chose to add an extra month to each 12-month interval and examine a 39-month period (3 years and 3 months rather than 3 years). Therefore, the revised definition is as follows: a patient is considered “consistently engaged in care” if they attend two or more visits with their medical care provider in every 13-month period with greater than 3 months between visits (Mugavero et al., 2012; Hall et al., 2012, (HRSA “HAB Core Clinical Performance Measures for Adult/Adolescent Clients”, 2008). Non-engagement and inconsistent engagement definitions stayed the same, such that, if a client had no CD4 or viral load tests within 39 months of his APM enroll date, the client was classified as “not engaged in care” and all other clients were classified as “inconsistently engaged in care”.

**Missing data.** Some clients did not have a CAREWare record (n=8). If a client's CAREWare record was missing, this could be a result of the client receiving care from a private physician, a physician at the Veteran's Administration, or another non-Ryan White supported provider who failed to record test results in the CAREWare database, as legally required. Alternatively, CD4 tests and viral load counts could be truly missing. For those who were missing a CAREWare record entirely, I examined the in-person client interview data and transcripts to determine if the data were truly missing because the person was not engaged in care or if they were in care.

The majority of these clients reported receiving viral load and CD4 tests during the in-person interview. However, the test they reported in the interview occurred after the 39-month period post-release window of interest and after the creation of the CAREWare database (late June 2011). Given this, I had to assume they were not in care during the period captured in the CAREWare database because there is no evidence they received a test prior to June 2011. If, for instance, they reported a test in the in-person interview that fell into the CAREWare database period, we would have evidence that the CAREWare database was inaccurate for that person. However, this was not the case for all 8 clients. Therefore, all 8 clients without a CAREWare record were classified as not engaged in care.

**Sexual orientation.** Sexual orientation was obtained from the in-person interview. Sexual orientation was collapsed into two categories for analysis, heterosexual and gay, lesbian or bisexual. The majority of the sample was heterosexual (65%).

**Social support.** The Arizona Social Support Interview Schedule (Barrera, 1980, 1981) was used to gather information about people in participants' support network. This measure has

shown to be internally consistent in multiple studies ( $\alpha = .70 - .78$ ) (Barrera, 1980, 1985; Hernandez-Plaza, Pozo & Alonso-Morillego, 2004).

The 25-item measure collects information about five different types of social support: intimate support, physical support, material support, social recreational support, and sexual support. Intimate support pertains to support and advice about personal or private feelings. Physical support pertains to physical acts of support, such as going to the store for someone. Material support pertains to tangible belongings, such as loaning money. Social recreational support pertains to people to hang out with. Sexual support pertains to support for sexual health, such as someone you ask about condoms. For each of these support types, the measure collects information about the number of people respondents received support from and satisfaction with support. Two scores were calculated from this measure: support network size and satisfaction with support received.

***Social support network size count.*** This subscale collects information on the number of members in the support network respondents used for intimate support, physical support, material support, social recreational support, and sexual support. For the purposes of this study, a continuous variable was created based on a count of the unique number of people respondents named across all types of support. Number of members in social support network ranged from 0 to 15 with a mean of 6.7 ( $SD = 3.9$ ).

***Support satisfaction score.*** This subscale collects information on satisfaction with received intimate support, physical support, material support, social recreational support, and sexual support. Response choices range from 1 – “very dissatisfied” to 4 – “very satisfied”. I summed individual responses to create a single score, which can range from 4-20. Lower scores

indicate dissatisfaction. Satisfaction with social support ranged from 4 to 20 with a mean of 13.4 ( $SD = 4.5$ ).

**Patient-provider relationship.** To assess satisfaction with patient-provider relationship, Bakken et al.'s (2000) Engagement with Health Care Provider scale was used. The scale is a 13-item measure of patient-provider relationship quality. An example item was: "My healthcare provider respects me." Response choices range from 0 – "never" to 3 – "always". I summed responses to create a summary score. Summed scores range from 0-39. Higher scores indicate greater provider relationship satisfaction. The mean score for this sample was 32.61 ( $SD=8.7$ ). Cronbach's alpha for this sample was 0.96.

**Individual-level risk index.** To assess individual-level factors that may influence care engagement, a composite index was constructed. It is difficult to accurately measure a complex concept with a single indicator. Rarely are we able to capture all facets of a concept. To account for this, I created an index of individual-level risk factors by combining several indicators into one composite measure to capture the cumulative impact of individual-level risk. The composite index was calculated following Trochim & Donnelly's (2001) steps for constructing an index.

First, I used recent literature to conceptualize the components of the individual-level index. Individual-level factors that emerged as influential to care engagement included race, poverty, current employment status, transportation access, history of substance use, history of mental illness, incarceration history, educational attainment, and history of housing instability (Cargill, 2012; Traeger, et al., 2012; Mugavero et al., 2009, 2007; Rajabiun et al., 2007; Malik-Kane & Visser, 2008; Petersilla, 2003, Rose & Clear, 2002; Dennis, et al., 2015; Haley et al., 2014). Next, I operationalized each of these variables to create a composite individual-level risk



score. I created each variable as a dichotomy so that items would be equally weighted. I coded each variable as 1 or 2, with higher scores indicating higher individual-level risk.

***Educational attainment.*** Clients were asked to identify their level of educational attainment as graduate or professional degree, bachelor's degree, associate's degree, some college, high school graduate/GED and less than high school. Educational attainment was coded as: (1) some college, associate's degree, bachelor's degree or graduate degree (n=27), or (2) less than high school, high school or GED (n=33). Although there is no literature to support this specific cutoff, relevant literature supports lower educational attainment may be related to poor engagement in HIV care (Kalichman, Catz, Ramachandran, 1999; Wolf et al., 2007; Cargill, 2012).

***Race.*** Race was obtained from the APM client record. Race was collected as: Black/African American, White, Asian/Pacific Islander, Arab/Chaldean, Indian/Native American and other. For the analysis, race was coded as: (1) White (n=7), or (2) Black/Mixed (n=53). Relevant literature supports racial minority status, and Black specifically, may be related to poor engagement in HIV care (Traeger, et al., 2011; Mugavero et al., 2009, 2007; CDC, 2012; Rebeiro, et al., 2013; Ulett, et al., 2009; Hall, et al., 2012; Torian et al., 2008; Hall, et al., 2013).

***Income.*** Clients were asked to report their current monthly household income and how many people that income supports. In the analytic sample, income ranged from \$0-\$5200 with a mean of \$1031.92 ( $SD = 939.86$ ). The majority of clients only supported themselves (n=44); 9 clients supported two people, 2 clients supported three people, and 2 clients supported five people. Income was coded as: (1) current income is above the federal poverty level (n=21), or (2) current income is below the federal poverty level (n=38). I accounted for the number of people the income supports in the household when assigning these codes. Federal poverty level

information was obtained from the DHHS measure of income level in 2011. Relevant literature suggests lower income may be related to poor engagement in HIV care (Rajabiun et al., 2007; Rebeiro, et al., 2013; Ulett, et al., 2009; Torian et al., 2008; Giodano, et al., 2003; Petersilla, 2003, Clear et al., 2001).

***Substance use history.*** Substance use history was obtained from the APM client record and was coded such that: (1) APM client record indicated no history of substance use (n=15), or (2) APM client record indicated a history of substance use (n=45). Relevant literature suggests substance use may be related to poor engagement in HIV care (Dennis et al., 2015; Haley, et al., 2014; Malik-Kane & Visser, 2008; Ulett, et al., 2009; Torian et al., 2008; Giodano, et al., 2003).

***Mental health history.*** Mental health history was obtained from the APM client record and was coded such that: (1) APM client record indicates no history of mental illness (n=42), or (2) APM client record indicates a history of mental illness (n=18). Relevant literature supports mental illness may be related to poor engagement in HIV care (Malik-Kane & Visser, 2008; Rajabiun et al., 2007; 2013; Scheyett et al., 2010; Traeger, et al., 2012; Cashman et al, 2004).

***Employment.*** Clients were asked to report their current employment status during the client interview: employed full time (>34 hours per week), employed part-time, sporadically employed. Employment was coded as: (1) currently employed (n=11), or (2) currently unemployed (n=49). Relevant literature suggests unemployment may be related to poor engagement in HIV care (Cargill, 2012; Rajabuun et al., 2007; Dennis, et al., 2015; Malik-Kane & Visser, 2008).

***Housing stability and satisfaction.*** To assess housing stability, clients were asked whether or not they had been homeless since their release. Homelessness was defined as not having your own house or apartment, living on the streets or in a shelter, or staying with friends

or family in their apartment without paying rent. For the proposed analysis, homelessness was coded as: (1) never homeless since release (n=21), or (2) ever homeless since release (n=39).

Clients were asked how satisfied they were with their current housing situation during the client interview. Response options included extremely satisfied, satisfied, mixed, dissatisfied, and extremely dissatisfied. Current housing satisfaction was collapsed so it was dichotomous: (1) extremely satisfied or satisfied (n=32) or (2) extremely dissatisfied, mixed, or dissatisfied (n=28). The “mixed” responses (n=14) were classified as dissatisfied because mixed satisfaction implies some dissatisfaction with their housing. Relevant literature suggests housing instability and homelessness may be related to poor engagement in HIV care (Dennis et al., 2015; Haley et al., 2014; Malik-Kane & Visser et al., 2008; Brinkley-Rubenstein & Turner, 2013).

***Transportation.*** Clients were asked if they had access to reliable transportation (e.g., car, friend’s car, bus). Access to transportation was coded as (1) reliable access to transportation (n=45) or (2) no access to reliable transportation (n=15). Relevant literature suggests access to transportation may be related to poor engagement in HIV care (Buchberg et al., 2015; Dennis, 2015).

*Scoring individual-level risk index.* To create a single composite risk score, each variable in the index was unit weighted, as these are as accurate as empirical (optimal) weights (Wainer, 1978). Scores on each of the variables were summed. Scores could range from 9-18, with lower scores indicating lower individual-level risk and higher scores indicating higher individual-level risk. In the analytic sample, scores ranged from 10-15 with a mean of 12.43 (SD = 1.6). The index was normally distributed. (See Appendix A for a description of the validation of the individual-level risk index.)

## Analysis

Prior to data analysis, I ensured the data were clean. I randomly checked the paper data against the electronic data by generating a randomly ordered participant ID number list. I checked every fifth file. Next, I calculated frequency distributions and descriptive statistics (means, standard deviations, and ranges) for all pertinent variables to check for outliers and missing data. In addition, I computed a correlation matrix of all of the individual-level factors. Outliers were examined to assess whether data entry errors or failure to specify missing values accounted for missing data. There were no outliers in the main variables used for hypothesis testing. Given this, no transformations were needed to deal with outliers. As a result of the size of the analytic sample, I used egan row total imputation rather than remove missing cases to calculate the sum scores for the satisfaction with social support variable (Tabachnick & Fidell, 2013). This approach is appropriate for this type of data because the data was missing truly at random and because it allowed me to retain all cases for analysis. This imputation technique was only necessary for two cases.

To address hypotheses one to five, I conducted bivariate analyses, followed by a multinomial logistic regressions. I used a nested sequential multinomial logistic regression to test hypothesis 5. Logistic regression was an appropriate for these data because it is a flexible analytic tool. It does not assume normally distributed data, linearity or equal variance among groups (Tabachnick & Fidell, 2013). Furthermore, it has the capacity to mix several types of predictors and outcomes, which is advantageous for this dataset (Tabachnick & Fidell, 2013). First, I conducted bivariate analyses (t-test, ANOVA, Chi-Square) to test the relationships between each predictor and the dependent variable, care engagement status. Subsequently, I conducted a multinomial logistic regression with relative risk ratios to predict membership in the

three care engagement categories (consistently engaged in care, inconsistently engaged in care, and not engaged in care) in three blocks (Tabachnick & Fidell, 2013). In the first block, I entered the control variable (sexual orientation). In the second block, I added the individual-level risk score. In the third block, I included network size and satisfaction with social support. I assessed model adequacy or goodness of model fit by comparing Akaike's (AIC) and Bayesian (BIC) information criteria between models. Models with smaller AIC and BIC indicate better fit (Tabachnick & Fidell, 2013).

To assess the role of patient-provider relationships on engagement, I repeated this analysis for those who were consistently and inconsistently engaged in care, regressing engagement status first on sexual orientation, followed by the composite individual-level risk score, and then by social support, network size, and provider satisfaction. All bivariate and multivariate analyses were conducted in Stata's Data Analysis and Statistical Software (Stata Corp, 2015).

## RESULTS

I will begin this section by describing the characteristics of the entire sample. Then, I will describe characteristics for each of the three care engagement groups. Finally, I will present the results of hypothesis testing. Due to the small sample size, I report conventionally non-significant results as findings trending toward significance, as these marginally significant effects may have been significant given a larger sample size (Turner, Miller & Henderson, 2008). For the purposes of this project, I considered  $p < .05$  as significant and  $p < .10$  as trending toward significant.

### Demographic Characteristics

The sample included 60 formerly incarcerated individuals who received APM services between May 2003 and May 2008. The majority of the sample was Black (86.7%), non-Hispanic (98.3%), and currently identified as male (96.7%). Respondents ranged in age from 31 to 68 ( $M=48.17$ ,  $SD=7.41$ ). Most of the respondents identified as straight or heterosexual (65.0%).

Respondents faced a significant number of individual-level challenges. Over half of the sample had a high school education or less (55.0%) and nearly all were unemployed at the time of research (81.7%). The average monthly income ranged from \$0 - \$5,000 (Median=\$874.0). Many respondents reported lifetime histories of substance use (75.0%) and homelessness (65.0%). A minority of respondents reported a history of mental illness (30.0%). Length of time spent incarcerated ranged from 6 months to 30 years ( $M=6.17$ ,  $SD= 5.54$ ).

For the purposes of this research, participants were classified as not engaged in care, inconsistently engaged in care, or consistently engaged in care. The most common care engagement pattern was inconsistent engagement, accounting for 50.0% of respondents ( $n=30$ ). The least common was consistent engagement, accounting for 17.0% of respondents ( $n=10$ ). Approximately 33.0% were not engaged in care ( $n=20$ ). To compare demographic characteristics

across the three care engagement groups, I used chi-square likelihood ratio tests, t-tests, and ANOVA, depending on the nature of the variable being reviewed. Only those variables with sufficient variance to perform statistical tests were assessed. Examining demographics among the three groups revealed differences on sexual identity ( $p = .03$ ) and current income ( $p = .01$ ). Individuals who identified as gay or bisexual were more likely to be members of the consistent care group than were individuals who identified as straight or heterosexual. The consistent care engagement group had the largest monthly income and the non-engagement group had the smallest monthly income (Table 2). No other significant differences emerged on demographics among the three engagement groups.

Table 2.

*Demographic Characteristics by Care Engagement (N=60)*

	<b>Not Engaged in Care (n=20)</b>		<b>Inconsistently Engaged in Care (n=30)</b>		<b>Consistently Engaged in Care (n=10)</b>		<b>Total (N=60)</b>		$\chi^2$
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	
<b>Gender</b>									--
Male	19	95.0	29	96.7	10	100.0	58	96.7	
Female	1	5.0	1	3.33	0	0	2	3.3	
<b>Race</b>									--
Black	19	95.0	25	83.3	9	90.0	53	88.3	
Other	1	5.0	5	16.7	1	10.0	7	11.7	
<b>Sexual Orientation</b>									7.2*
Straight	13	65.0	23	76.7	3	30.0	39	65.0	
Gay	7	35.0	7	23.3	7	70.0	21	35.0	
<b>Hispanic</b>									--
No	20	100.0	30	100	9	90.0	59	98.3	
Yes	0	0	0	0	1	10.0	1	1.7	
	<b>M</b>	<b>Range</b>	<b>M</b>	<b>Range</b>	<b>M</b>	<b>Range</b>	<b>M</b>	<b>Range</b>	<b>F</b>
<b>Age</b>	46.9	31 - 58	48.6	33 - 63	49.5	42 - 68	48.1	31 - 68	0.5
<b>Length of Incarceration (in years)</b>	5.1	0.8 - 15.0	6.2	0.5 – 30.0	8.1	2.0 – 15.0	5.9	0.50 – 15.0	1.2
	<b>Med</b>	<b>Range</b>	<b>Med</b>	<b>Range</b>	<b>Med</b>	<b>Range</b>	<b>Med</b>	<b>Range</b>	<b>F</b>
<b>Current Monthly Income (in dollars)</b>	716. 4	(0- 2,400)	998.9	(0- 3,200)	1,758	(0- 5,200)	874. 0	(0- 5,200)	4.7*



## Descriptive Characteristics

To understand the association between individual and relational indicators on care engagement, I conducted one-way between subject's ANOVAs. When necessary, Bonferroni post-hoc tests were conducted to compare engagement statuses against each other (Tabachnick & Fidell, 2013).

**Indicators of individual-level risk.** In Table 3, I display the individual-level risk score and its corresponding indicators by care engagement status. As shown, there were significant differences in substance use history by care engagement status ( $F(2,59) = 8.07, p = .000$ ). Post-hoc tests revealed the consistent engagers were significantly less likely to possess substance use histories than non-engagers ( $p = .005$ ) and inconsistent engagers ( $p = .001$ ).

The effect of the total individual-level index score on care engagement status trended toward significance [ $F(2,59) = 2.8, p = .07$ ]. Post-hoc tests revealed a trend toward significant mean differences on the individual-level risk score between the non-engaged group and the consistently engaged group; the consistent engagers had lower individual-level risk scores than the non-engaged group ( $p = .077$ ). There were no significant differences between the non-engaged and the inconsistently engaged group ( $p = \text{n.s.}$ ).

Table 3.

*Indicators of Individual-level Risk Factors by Care Engagement (N=60)*

	<b>Not Engaged</b> (n=20)		<b>Inconsistently Engaged</b> (n=30)		<b>Consistently Engaged</b> (n=10)		<b>Total</b> (N=60)		
	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	<b>F</b>
<b>Educational Attainment</b>									<b>0.16</b>
High School, GED or less	12	60.0	16	53.3	5	50.0	33	55.0	
Associates or more	8	40.0	14	45.7	5	50.0	27	45.0	
<b>Below Poverty Level</b>									<b>1.7</b>
Yes	14	70.0	21	70.0	4	40.0	39	65.0	
No	6	30.0	9	30.0	5	60.0	21	35.0	
<b>Substance Abuse History</b>									<b>8.1*</b>
Yes	16	80.0	26	86.7	3	30.0	45	75.0	
No	4	20.0	4	13.3	7	70.0	15	25.0	
<b>Mental Illness History</b>									<b>1.1</b>
Yes	5	25.0	8	26.7	5	50.0	18	30.0	
No	15	75.0	22	73.3	5	50.0	42	70.0	
<b>Currently Employed</b>									<b>0.5</b>
Yes	3	15.0	5	16.7	3	30.0	11	18.3	
No	17	85.0	25	83.3	7	70.0	49	81.7	
<b>Ever Homeless</b>									<b>1.7</b>
Yes	16	80.0	18	60.0	5	50.0	39	65.0	
No	4	20.0	12	40.0	5	50.0	21	35.0	
<b>Satisfied with Housing</b>									<b>0.8</b>
Yes	11	55.0	14	46.7	7	70.0	32	53.3	
No	9	45.0	16	53.3	3	30.0	28	46.7	
<b>Access to Transportation</b>									<b>0.8</b>
Yes	13	65.0	24	80.0	8	80.0	45	75.0	
No	7	35.0	6	20.0	2	20.0	15	20.0	
	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>	<b>M</b>	<b>SD</b>	<b>F</b>
<b>Total Individual-level Index Score (10-15)</b>	12.80	1.6	12.53	1.5	11.40	1.7	12.43	1.6	<b>2.8*</b>

Note. \* signifies  $p < .05$

**Indicators of relationship quality.** In Table 4, I display the indicators of relationship quality by care engagement status. I examined network size, relationship satisfaction, and patient-provider relationship satisfaction.

**Network size.** Network size for this sample ranged from 0 to 15 members ( $M=6.7$ ,  $SD=3.9$ ). Although the non-engagers reported the smallest social network, compared with the other two groups ( $M=5.8$ ,  $SD=3.5$ ) and the inconsistent and consistent engagers reported the larger social networks (inconsistent -  $M=7.2$ ,  $SD=4.0$ ; consistent -  $M=7.0$ ,  $SD=4.6$ ), the mean network size difference was not statistically significant ( $F(2, 59) = 0.77$ ,  $p = \text{n.s.}$ ).

**Satisfaction with social support.** Respondents reports of satisfaction with the social support they received ranged from four to 20 on a 20-point scale (high scores indicate being satisfied). Although the non-engagers were least satisfied with the social support they received ( $M = 12.6$ ,  $SD = 5.7$ ) and the consistent ( $M = 13.1$ ,  $SD = 5.3$ ) and inconsistent engagers ( $M = 13.9$ ,  $SD = 3.3$ ) reported higher total satisfaction with social support, the mean differences for satisfaction with social support between groups was not statistically significant ( $F(2, 59) = 0.56$ ,  $p = \text{n.s.}$ ).

**Satisfaction with medical provider.** To examine satisfaction with the patient-provider relationship, I compared those who were consistently engaged in care with those who were inconsistently engaged in care. The consistent engagement group reported greater satisfaction ( $M = 37.5$ ,  $SD = 7.4$ ) with their patient-provider relationship than the inconsistent engagers ( $M = 34.2$ ,  $SD = 11.1$ ). T-tests revealed that the mean difference between the consistently engaged and inconsistently engaged groups on patient-provider satisfaction trended toward significance ( $t(0, 40) = -0.87$ ,  $p = 0.1$ ).

Table 4.

*Indicators of Relationship of Quality by Care Engagement (N=60)*

	<b>Not Engaged in Care (n=20)</b>		<b>Inconsistently Engaged in Care (n=30)</b>		<b>Consistently Engaged in Care (n=10)</b>		<b>Total (N=60)</b>		<b>F/t</b>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<b>Network Size</b>									
Avg # of People in Network	5.8	3.5	7.2	4.0	7.0	4.6	6.7	3.9	<b>0.77</b>
<b>Network Satisfaction</b>									
Network Satisfaction w/ Support	12.6	5.7	14.0	3.3	13.1	5.3	13.4	4.5	<b>0.56</b>
<b>Provider Relationship</b>									
Satisfaction w/ Medical Provider	--	--	34.20	11.1	37.5	7.4	35.9	12.4	<b>-0.87*</b>

*Note.* \*signifies  $p < .05$

## Hypothesis Testing

As shown in Table 5, I tested all hypotheses using multinomial logistic regression models. I used sexual orientation as a covariate due to its' systematic association with engagement status ( $X^2(2) = 7.18, p = .03$ ). The consistently engaged group served as the reference group for hypotheses 1-4.

**Hypothesis 1.** My first hypothesis was that those with low individual-level risk scores would be most likely to engage in care consistently. This hypothesis was supported. A one-unit increase in individual-level risk was associated with a 1.90 increase in the relative log-odds of being non-engaged versus consistently engaged. Similarly, a one-unit increase in individual-level risk was associated with a 1.7 increase in the relative log odds of being inconsistently engaged versus consistently engaged. In other words, lower individual-level risk predicted classification as a consistent engager ( $X^2(4) = 12.70, p = .013$ ).

**Hypothesis 2.** My second hypothesis was that those who reported a greater number of people in their social network would be most likely to engage in care consistently. This model trended toward statistical significance, indicating partial support for the hypotheses. A one-person increase in network size was associated with a .95 decrease in the log-odds of being unengaged versus consistently engaged. Similarly, a one-person increase in network size was associated with a 1.07 increase in the log-odds of being consistently engaged versus inconsistently engaged. In other words, these data show a trend toward finding a larger social network was associated with classification as a consistent engager and an inconsistent engager as compared to a non-engager ( $X^2(4) = 9.10, p = .059$ ).

**Hypothesis 3.** My third hypothesis was that those who reported higher levels of satisfaction with the support they received would be most likely to engage in care consistently.

This hypothesis was partially supported by the analyses, as the model trended toward statistical significance. A one-unit increase in satisfaction with support received was associated with a 0.98 decrease in the relative log-odds of being non-engaged versus consistently engaged. Similarly, a one-unit increase in satisfaction with support received was associated with a 1.05 increase in the relative log-odds of being consistently engaged versus inconsistently engaged. In other words, greater satisfaction with support predicted classification as a consistent engager and an inconsistent engager, as compared to non-engagers ( $X^2(4) = 8.26, p = .083$ ).

**Hypothesis 4.** My fourth hypothesis was that consistent engagers would report higher levels of satisfaction with their medical provider than inconsistent engagers. This hypothesis was supported. A one-unit increase in satisfaction with one's medical provider was associated with a 0.95 decrease in the relative log-odds of being inconsistently engaged versus consistently engaged. In other words, satisfaction with medical provider predicted classification as a consistent engager ( $X^2(2) = 8.40, p = .015$ ).

**Hypothesis 5.** My final hypothesis was that relational-level factors would explain more variation in engagement in care than individual-level factors. This hypothesis was not supported. As shown in Table 5, adding relational-level factors did not significantly improve model fit once individual-level risk was taken into account. The final models did explain more variance overall and were statistically significant when compared to the model included only sexual orientation and individual-level risk, however the parsimonious model including only the covariate and the individual-level factors best predicted care engagement.

The second regression model included only two engagement patterns as outcomes (inconsistent and consistent). These results were similar to the first model. As shown in Table 6, adding in relational-level factors, including patient-provider relationship, did not significantly

improve model fit once individual-level risk was considered. This model did explain more variance than the other model and was statistically significant, however the parsimonious model including only the covariate and the individual-level factors best predicted care engagement.

Table 5.

*Model 1: Hypothesis Testing with Three Outcomes*

<b>Block 1</b>					<b>Block 2</b>				<b>Block 3</b>			
	<i>RRR</i>	<i>SE</i>	<i>P</i>	<i>CI</i>	<i>RRR</i>	<i>SE</i>	<i>P</i>	<i>CI</i>	<i>RRR</i>	<i>SE</i>	<i>P</i>	<i>CI</i>
<b>Not Engaged</b>												
Sexual orientation	0.57	0.36	0.37	.16-1.97	0.57	0.36	0.38	0.16-2.0	0.47	0.32	0.27	0.13-1.78
Individual-level Risk	-	-	-	-	1.11	0.21	0.58	0.77-1.61	1.07	0.21	0.74	0.72-1.57
Network Size	-	-	-	-	-	-	-	-	0.91	0.86	0.29	0.75-1.09
Network Satisfaction	-	-	-	-	-	-	-	-	0.97	0.07	0.67	0.83-1.13
<b>Consistently Engaged</b>												
Sexual Orientation	0.13	0.11	0.01	0.02-0.64	0.12	0.10	0.01	0.02-0.62	0.10	0.91	0.01	0.02-0.59
Index Score	-	-	-	-	0.58	0.17	0.06	0.33-1.02	0.53	0.16	0.04	0.29-0.97
Network Size	-	-	-	-	-	-	-	-	0.96	0.12	0.75	0.76-1.22
Network Satisfaction	-	-	-	-	-	-	-	-	0.91	0.98	0.36	0.732-1.12
<b>Pseudo R<sup>2</sup></b>					0.10				0.13			
<b>X<sup>2</sup></b>					0.01				0.05			
<b>LL</b>					-54.3				-52.9			
<b>LR Test</b>					0.057				0.564			
<b>AIC</b>					120.7				125.7			
<b>BIC</b>					133.2				146.6			

Note. Reference group is “inconsistently engaged in care”



Table 6.

*Model 2: Hypothesis Testing with Two Outcomes*

<b>Block 1</b>					<b>Block 2</b>				<b>Block 3</b>			
	<i>RRR</i>	<i>SE</i>	<i>P</i>	<i>CI</i>	<i>RRR</i>	<i>SE</i>	<i>P</i>	<i>CI</i>	<i>RRR</i>	<i>SE</i>	<i>P</i>	<i>CI</i>
<b>Consistently Engaged</b>												
Sexual Orientation	0.13	0.11	0.01	.03-0.64	0.12	0.11	0.02	0.02-0.71	0.12	0.11	0.02	0.02-0.70
Individual-level Risk	-	-	-	-	0.61	0.18	0.08	0.35-1.07	0.56	0.19	0.08	0.30-1.07
Network Size	-	-	-	-	-	-	-	-	1.00	0.13	0.97	0.78-1.30
Network Satisfaction	-	-	-	-	-	-	-	-	0.87	0.06	0.32	0.67-1.14
Satisfaction with Medical Provider	-	-	-	-	-	-	-	-	1.03	0.56	0.49	0.93-1.15
<b>Pseudo R<sup>2</sup></b>		0.16				0.23				0.28		
<b>X<sup>2</sup></b>		0.008				0.006				0.03		
<b>LL</b>		-19.0				-17.4				-16.3		
<b>LR Test</b>		0.008				0.072				0.540		
<b>AIC</b>		42.0				40.8				44.6		
<b>BIC</b>		45.4				45.8				54.7		

*Notes.* Reference group is inconsistently engaged in care

## **DISCUSSION**

Understanding engagement in HIV care among at-risk populations is crucial to improving health outcomes for these vulnerable groups, particularly given the national shift toward treatment-focused efforts to address the HIV epidemic. PLWH are especially vulnerable to falling out of care in the years immediately after release from prison, and this disengagement may have fatal consequences (Mugavero, 2010; Baillargeon et al., 2009; Dennis, et al., 2015). This study identified a number of factors that may be particularly influential on engagement in care among formerly incarcerated PLWH over a 39-month community reentry period.

### **Patterns of Care Engagement**

Findings indicated that most respondents failed to engage in care adequately following their release from prison. The federal government defines engagement in care as being linked to a HIV care provider and attending two visits per year, at least 3 months apart (HRSA HAB, Mugavero, 2010). In this study, I classified respondents as consistently engaged in care if they received two CD4 or viral load tests within every 13-month period, with at least 3 months between tests. According to this definition, only 17% of respondents in this sample were engaged in care over the 39 months immediately following incarceration. This rate is roughly half of what one might expect to see in the general population of PLWH and is substantially less than previous studies of formerly incarcerated individuals (Iroh et al., 2015; Stephenson, 2005; Palpeu et al., 2004; Wohl et al., 2011; Baillargeon et al., 2009).

There are several possible explanations for why I found higher rates of care disengagement in this study. First, this finding may be a result of the dearth of research in this area that follows formerly incarcerated PLWH over years. The current study benefitted from examining substantially longer follow-up periods than previous investigations, increasing my ability to identify disengagement over time, as the longer the period under investigation, the

greater the possibility of missed medical appointments and tests. In other words, because individuals have continual opportunities to fall out of care, longer observation periods may be necessary to fully capture all possible trajectories of disengagement. The current study may provide a more accurate reflection of care engagement in the years following release from prison. Existing studies, due to their short follow-up periods, may actually underestimate the rate at which formerly incarcerated PLWH fall out of care because they only examine behavior over a few months. Considering the challenges of engaging in care last a lifetime and may be uniquely difficult for formerly incarcerated PLWH, future research should examine engagement longitudinally to characterize how rates of engagement vary over time accurately.

Alternatively, the lower rates of consistent care engagement in this study may be a result of other unexamined factors. For example, in Iroh and colleagues' (2015) review of engagement in care for incarcerated persons, they suggest that rates of engagement may vary based on location. Depending on the city, state, or prison, there may be more resources or programming devoted to helping people engage in care (Iroh et al., 2015). Of all the studies included in Iroh et al.'s, review (2015) none examined formerly incarcerated PLWH in the state of Michigan. Therefore, it may be that community, institutional, and legislative factors in the state of Michigan contribute to lower rates of care engagement. Future research should build upon this project and continue exploring factors that influence different patterns of engagement in light of state policies and programs.

In this study, I identified three distinct care engagement patterns – non-engagers, inconsistent engagers, and consistent engagers. The consistent engagers were people who attended a care appointment approximately twice a year for 39 consecutive months with visits at least 3 months apart. Non-engagers did not attend any appointment for 39 consecutive months.

Inconsistent engagers started care long after their release, started and stopped care and then restarted again, or started care and then stopped entirely over a period of 39 consecutive months. Inconsistent engagement was the most common pattern and the most complex. The CoC suggests that movement along the continuum is a simple, linear process (Mugavero, et al., 2013; Eldred & Maltiz, 2007). People test, find a doctor, visit their doctors consistently, take their medications and become virally suppressed. The predominance of inconsistent engagers in the sample suggests that some individuals' movement through the continuum may be more complex than the CoC implies. (Figure 1; Gardner, et al., 2011; Cheever, 2007). This complex movement, perhaps best characterized as sporadic engagement, may be overlooked in current approaches to measuring engagement because engagement is often treated as a simple dichotomy: engaged, not engaged. Simplifying engagement in this way fails to capture the nuances of inconsistent engagement. Furthermore, dichotomous measurement assumes inconsistent engagers never interact with physicians or other systems of care, which is not always the case. Findings from this study suggested inconsistent engagers did interact with physicians and had distinct needs from non-engagers and consistent engagers. If inconsistent engagers continue to be overlooked in typical engagement measures we are not only losing important information about engagement rates, but also failing to capture interactions with health care systems, sporadic or otherwise, that may be useful for intervention. Future research should continue to explore the optimal measurement of care engagement and approaches to avoid obscuring nuanced patterns of interaction with medical care.

### **Factors that Influenced Care Engagement**

Engagement in care for individuals reentering the community post-incarceration remains tremendously difficult (Brinkley-Rubinstein & Turner, 2013; Iroh, Mayo & Nijhawan, 2015;

Hall, et al., 2013). In this study, respondents experienced co-occurring poverty, comorbid health disorders, unemployment, unstable housing, inconsistent access to transportation, and lack of education. Consistent with the bulk of literature in this area, I found that these individual-level challenges burdened PLWH during reentry and inhibited their ability to engage in care. As the presence of individual-level risks increased, the odds of care engagement decreased. Individual-level factors were the best predictors of engagement in care. Although many studies have established that PLWH and ex-offenders face competing individual demands during reentry, only a handful of studies have examined the cumulative effects of these demands (Dennis et al., 2015; Haley et al., 2014). In this study, I found that the additive effects of histories of mental health, substance use, housing instability, current poverty, lack of education, unemployment, and inconsistent access to transportation predicted poor care engagement. These results support the National HIV/AIDS Strategy of addressing the basic needs of PLWH as a means of addressing the HIV epidemic. This study's results suggest that addressing the basic needs of recently released PLWH may be an effective way to bolster their ability to engage in care.

Of all the individual-level risk indicators examined, two seemed to drive the relationship between individual-level risk and lack of engagement: substance use and poverty. In bivariate analyses, I observed living below the poverty line was associated with not engaging in care. Prior studies on the role of economics in care engagement have similarly found that, even with entitlements, people who live below the poverty line tend to struggle with retention in care (Dennis, et al., 2015; Haley et al., 2014). This study adds to the growing body of evidence that entitlements appear insufficient to meet the needs to support routine engagement in care for people living below the poverty line.

Second, in bivariate analyses, respondents who were not engaged in care were more likely to have a history of substance use disorders than consistent engagers. This finding is consistent with other evidence that numerous PLWH leave prison with substance conditions, many of which can impact engagement in care (Ulett, et al., 2009; Traeger et al., 2012; Rajabiun, 2007; Stephenson, 2005; Mallik-Kane & Visher, 2008; Rebeiro, 2013). Scholars speculate that substance users may have more difficulty managing and attaining financial resources in ways that undermine their ability to engage consistently (Malta, Strathdee, Magnanini & Bastos, 2008; Gonzalez, Barinas & O’Clerigh, 2011). Furthermore, as is consistent with this study, researchers have found that substance users may experience comorbidities that disrupt healthcare access and treatment outcomes and vulnerability to poor treatment in the medical system (Krishnan, Wickersham, Chitsaz, Springer, Jordan, Zaller & Altice, 2013; Springer, Spaulding, Meyer, 2011). In a qualitative focus group, Dennis and colleagues (2015) found that many individuals reentering simply wanted to celebrate their homecoming and returned to an environment occupied by alcohol and drugs. These individuals chose not to adhere to ART in the presence of their “partying” peers for fear of stigma and inadvertent disclosure of their serostatus. Injection drug use, in particular has been associated with less timely linkage to care (Torian, 2008) and poor retention (Rebeiro, 2013, Ulett, et al., 2009), including missed appointments and non-adherence to ART (Giordano, 2003). Additionally, those who used substances prior to incarceration are more likely to use again upon reentry (Mallik-Kane & Visher, 2008). Findings from the current study highlight the continuing need to address substance use disorders after release from prison.

Researchers have suggested that social support and high-quality patient provider relationships are uniquely relevant in the lives of formerly incarcerated PLWH, however,

scholars are just beginning to explore the role of relationships in supporting engagement in care for reentering community life post-incarceration (Dennis, et al., 2015; Pettus-Davis, et al., 2009). In these data, the only relational factor that clearly distinguished between care engagement patterns was satisfaction with the medical provider relationship. Although it is possible that relational factors could have been significant in a better-powered study, the relational items that were included in the final model (e.g., network size, satisfaction with social support) failed to distinguish among engagement patterns. In this study, consistent engagers were significantly more satisfied with their providers than those who did not consistently engage in care. Given the stark differences between consistent engagers and the inconsistent engagers in their histories of substance abuse and poverty, these data raise the question of whether physician biases affect the quality of relationships between formerly incarcerated PLWH who are burdened by these challenges. Qualitative research has found that some patients feel providers may exhibit bias against HIV-positive drug users, limit provision of ART prescriptions to drug users, and are not understanding of drug users' competing needs (Gerbert, Maguire, Bleecker, Coates & McPhee, 1991, Wong et al., 2004; King et al., 2004; McCoy, 2005). Previous research has also suggested that substance use and poverty co-occur with stigma and medical distrust, which may interfere with a patient's positive interactions with providers (Wong, et al., 2004; Bakken, et al., 2000; Dennis, et al., 2015). Future research should examine the role of physician bias and their relationships with formerly incarcerated PLWH.

Sexual orientation emerged as a significant factor in distinguishing those who engaged in care successfully from those who did not. Respondents who identified as gay or bisexual were most likely to engage care consistently. Research on formerly incarcerated PLWH has failed to examine sexual orientation. The HIV prevention literature, however, suggests that young gay

men are more likely to seek out services than straight youth because the infrastructure surrounding HIV prevention and testing historically developed for gay men (Harper, Hosek & Robinson 2002; Harper et al., 2013). It may be that HIV awareness and use of HIV-care services is normative among the gay and bisexual male community, making it easier for those who are gay or bisexual to pursue care and feel comfortable doing so. Additionally, the HIV-infected people in this study who are not gay or bisexual may be prone to greater HIV stigma than those who are gay or bisexual. They may fear people will presume they are gay or bisexual because they have HIV. As such, they may be unwilling to participate in HIV care due to fear, stigma, and confidentiality concerns (Braithwaite & Arriola, 2003). Future research should strongly consider in depth examinations into sexual orientation when evaluating engagement in care for formerly or currently incarcerated PLWH. In sum, findings suggest that the reentry is a critical period fraught with an abundance of challenges that can impact engagement in HIV care, many of which remain under investigated.

## **Limitations**

Several limitations of the current study should inform interpretation of the findings. First, although the overall sample was 190, we could only locate 60 people for in-person interviews. Sample size limited the complexity of analyses that could be performed and accuracy of findings. Analyses with small sample sizes can suffer a decline in statistical power and an increase in the likelihood of a type II error (false negative) (Pett, 2015; Tabachnick & Fidell, 2013). Given the risk of using such a small sample, I took measures to reduce the likelihood of error by selecting statistical analyses that are appropriate for small samples (Pett, 2015; Tabachnick & Fidell, 2013). To ensure additional accuracy, I verified information in the interviews in other data sources. Despite the small sample and possibility of biased statistical



tests, I am confident of the findings because they are logical and consistent with previous literature. Nevertheless, future research should attempt to replicate these findings with larger samples.

Secondly, as a primary data source in this study was archival, the limitations that come with archival data apply to this study. I relied on the CAREWare database to create a measure of engagement in care. There were several advantages to using medical records from this source. However, I did not personally collect or clean these data, necessitating I accept that some errors in the data may be unknown to me (i.e. omissions in CAREWare database). Further, I cannot be certain that I correctly classified each respondents' engagement status given unknown data errors or omissions in CAREWare. I did take care to mitigate these limitations by verifying the CAREWare records with client's self-reports whenever possible, lending me greater confidence in the accuracy of these records.

Additionally, this study examined only factors associated with care engagement at two of four socio-ecological levels. Mugavero's original (2013) model of the socioecological influences on care engagement (Figure 4) suggests several individual, relational, community, and policy-level factors can impact care engagement. Although this study is limited because only a subset of factors suggested by Mugavero were investigated, the scope of this study did not allow for a full examination of each. As is typical when using a socioecological framework, research is generally only able to focus on one or two levels due to methodological constraints (DiClemente et al., 2005; Mugavero et al., 2013). Future research should move beyond these limitations and examine care engagement at all socioecological levels.

Moreover, the interview data may not have perfectly mapped onto the archival data. For example, the CAREWare data allowed me to classify people based on their CD4 and viral load

counts over 39 months following release. The interview data, however, only looked at current or recent behaviors. Therefore, we cannot know whether those current behaviors were stable features and representative of what occurred over the 39-month period. Future research might improve upon this design by following formerly incarcerated PLWH longitudinally, in order to assess relational and individual-level risks concurrent with care engagement and non-engagement behaviors.

Finally, engagement in care was based from the HRSA medical performance measure (HRSA, 2008). Recent reviews of measures of retention in care have suggested that only one measure of retention may not be sufficient (Mugavero et al., 2012, Hall et al., 2012, Baligh et al., 2012). Previous research suggests accuracy of measure may be different depending on the sample and data available and that some measures may be too rigid. Therefore, they recommend researchers combine more than one measure when examining retention or engagement in care. This study only used one measure of engagement and adapted this measure to be less rigid for this sample. Future research should continue to explore optimal measures of engagement and ideal combinations of measures, particularly over longer periods of investigation.

### **Implications for Research and Practice**

This study has several important implications for practitioners and researchers. Findings highlight that investigation into the specific needs for people who are inconsistently and not engaged in care is sorely needed. The varied patterns of inconsistent engagement suggests it is doubtful that there is a “one-size-fits-all” intervention for promoting care engagement. Ideally, practitioners could consider tailoring interventions to individuals’ specific needs, grounding interventions in an understanding of patients’ care engagement pattern.

For many patients who are out of care, stigma, lack of provider support, substance use, and unmet basic needs due to financial impoverishment seem to be the most salient impediments to engagement (Avery, et al., 2012; Pettus-Davis et al., 2009; Arriola et al., 2007). Given the results of this study, interventions that focus on more than one of these barriers simultaneously may be particularly promising for this population. Oxford Houses, for instance, are democratically run substance use recovery homes based on the Housing First model. These interventions prioritize access to housing as a gateway to other basic needs and resources (Wolitski, et al., 2010; Wang, Hong, Samuels, Savit, Sanders & Kushel, 2010; Jason & Ferrari, 2010). Oxford houses help address drug addiction and community reentry by providing stable housing without many restrictions or requirements. Most notably, these houses do not limit length of stay, provide a network of job opportunities, and a network of other reentering individuals in recovery. (Jason & Ferrari, 2010; Jason, Stone, Stevens & Light, 2014). Several papers have been published on the success of Oxford Houses and other Housing First interventions in increasing access to housing and reducing rates of relapse and recidivism (Jason, Davis, Ferrari, 2006; Krishnan, et al., 2013; Wolitski, et al., 2010; Tsemberis, 2004). Holistic interventions of this sort have never been examined in the context of PLWH during the community reentry period. Housing interventions such as these, which attend to housing instability, substance use recovery, social support, and employment, may be particularly useful in addressing the needs former inmates living with HIV. These types of resources, paired with financial incentives (HIV Prevention Trials Network Study, 2014) and integrated comprehensive HIV and substance use treatment and care may best address to challenges facing PLWH during reentry (Nunn, et al., 2009).

For PLWH post-incarceration, addressing only one socioecological layer of challenges is not enough. Relationships, particularly, quality of patient-provider relationship, may affect care engagement. Connection to a competent and trusted doctor immediately upon release is crucial. Providers must be capable of effectively responding to this population's co-occurring challenges. Many treatment providers are ill equipped to identify, let alone treat, substance use and mental health issues. McCoy (2005) found needs for respect and confidentiality were more commonly emphasized in socially marginalized and drug-using groups compared to highly educated and professionally employed groups. Given this, training physicians to be respectful of all patients and prepared to work with patients with several compounding and often stigmatized health challenges may be particularly important.

Several promising coordinated-care interventions could be adapted for this population. These interventions combine high-quality providers who prioritize patient-provider relationships, while connecting clients to ancillary medical and social services within close proximity. These “medical home” models are patient centered and ensure care is well coordinated and satisfactory to patients (Beane, Culyba, DeMayo & Armstrong, 2014). For example, the Bronx Transition Clinic has demonstrated preliminary success in linking people to these comprehensive care clinics (Fox et al., 2014; Teixeira, Jordan, Zaller, Shah, & Venters, 2014). The benefit of coordinated care, particularly for this population, is the ease of access to other crucial services and the identification of a personalized physician to facilitate care (Beane, Culyba, DeMayo & Armstrong, 2014; Starfield & Shi, 2004). Using this approach post-incarceration could capitalize on service accessibility, while also addressing quality of patient-provider relationships.

Findings also highlight the need to continue to pull apart the complexities of HIV stigma, particularly among individuals who do not identify as gay or bisexual. There appear to be unique

factors at play that affect engagement in care in this population as a function of sexual orientation. The care engagement literature among formerly incarcerated PLWH is in its infancy and has yet to begin looking at subgroups differences. Future research might benefit from examining post-incarceration experiences through the lens of intersectionality theory, which suggests that social identities such as race, gender, and sexual orientation interact to form qualitatively different meanings and experiences (Crenshaw, 1991; Bowleg, 2012; Warner, 2008).

## **Conclusion**

Formerly incarcerated PLWH are at a critical disadvantage when released from prison. Their health, safety, and wellness are at-risk. This population is more likely than the general population of PLWH to never link to care (Baillargeon et al., 2010) or to fall out of care (Baillargeon et al., 2009). With thousands of HIV-infected inmates being released from prison each year, intervening to support their engagement in care during the reentry is crucial for their individual health and the health of the community as a whole. Toward the aim of successfully connecting formerly incarcerated PLWH to care, this study offers important contributions to the literature. First, my work shows that care engagement does not follow one universal pattern following release from prison. To address distinctive patterns of suboptimal interaction and their unique predictors, interventions addressing engagement in care may need to be tailored. Additionally, I provide preliminary evidence for the cascading effects of multiple burdens on care engagement and the need for development of long-term multi-component and multi-level comprehensive interventions. Future work must further elucidate the multi-level mechanisms that prevent formerly incarcerated PLWH from securing health resources over the years following their release.

## APPENDICES

## APPENDIX A: Individual-level Risk Index Score: Validation Study

It is difficult to measure a complex concept with a single indicator accurately, as rarely are we able to capture all facets of a concept. By creating a composite risk index, errors deflate and yield a more precise measure (Singleton & Straits, 2010; Davis, Smith & Marsden, 2007). To assess individual-level factors that may influence care engagement, I constructed a composite index to capture the cumulative impact of individual-level risk. The composite index was constructed following Trochim & Donnelly's (2001) steps for constructing an index. The purpose of this appendix is to describe validation of the index. For a description of its construction, please see the methods section in the main document.

To validate the index, I assessed two different types of construct validity, convergent and discriminant validity (Campbell & Fiske, 1959; Trochim & Donnelly, 2001). Construct validity refers to the idea that if you really measured what you think you measured your construct should be related to a similar construct (Cronbach & Meehl, 1955; Trochim & Donnelly, 2001). In order to claim that the index has construct validity, I needed to establish both convergent and divergent validity. Convergent validation refers to the idea constructs that are theoretically associated with one another are in fact statistically associated. Divergent validation refers to the idea that measures of constructs that are theoretically unrelated are indeed unrelated statistically. To establish convergent validity of my index, I examined associations between my individual-level index and individual-level risk measures not included in the index (i.e. measures of depression, drug and alcohol use, and HIV stress). I chose these three measures because they are all individual-level risk factors for engagement in HIV care, they were collected with the same analytic sample, they are not currently included in the individual-level risk index, and they are theoretically similar to the index. Higher levels of depression, HIV stress, and substance use

should affect the ability to engage in care in the same way higher scores on the individual-level risk index should effect the ability to engage in care (Traeger, O’Cleirigh, Skeer, Mayer & Safren, 2012; Wohl et al., 2010). Depression was measured using the Center for Epidemiologic Studies Depression Scale (CESD) (Radloff, 1977; Eaton, et al., 2004), HIV stress using the The HIV/AIDS Stress Scale (Pakenham & Rinaldis, 2002), and substance use using the Alcohol and Other Drug Abuse (AOD) (Center for Substance Abuse Treatment, 1994; Winters & Zenilman, 1994). I expected the individual-level risk index to correlate positively with measures of HIV/AIDS stress, depression, and drug and alcohol use. There is no conventional criterion of statistical significance to asses construct validity, therefore I used the standard  $p < .05$  significance level to determine assessment of convergent and divergent validity.

To establish divergent validity, I examined associations between the individual-level index and sexual activity (i.e. number of sexual partners in the last 90 days and number of times engaging in unprotected sex in the last 90 days). I chose sexual activity because the literature indicates the factors in my individual-level risk index bear no consistent relationship to these aspects of sexual activity. Sexual activity was measured using a sexual risk and protective behaviors measure for people living with HIV. I expected individual-level risk scores to be uncorrelated with all measures of sexual activity.

#### **Construct Validity: Convergent Validity.**

To establish convergent validity, I examined associations between my individual-level index and individual-level risk measures not included in the index (i.e. measures of depression, drug and alcohol use, and HIV stress). I used the Pearson correlation coefficient to test associations. The individual-level risk score was significantly and positively correlated with all three subscales of the HIV/AIDS Stress Scale (social –  $r = .30$ ;  $p = .02$ ; instrumental –  $r = .51$ ;  $p$



= .00; emotional –  $r = .31$ ;  $p = .02$ ). The individual-level risk score trended toward significance with depression ( $r = .25$ ;  $p = .06$ ). The individual-level risk score was positively and significantly related to alcohol and other drug use ( $r = .31$ ;  $p = .02$ ).

### **Construct Validity: Divergent Validity.**

To establish divergent validity, I examined the associations between the individual-level index and sexual activity (number of sexual partners in the last 90 days and 12 months and number of times engaging in unprotected sex in the last 90 days and 12 months) using the Pearson correlation coefficient. The individual-level risk score was not significantly associated with number of sex partners in past 90 days ( $r = .27$ ;  $p = .12$ ), number of sex partners in past 12 months ( $r = .25$ ;  $p = .11$ ), number of times engaging in unprotected anal sex ( $r = .18$ ;  $p = .95$ ), or number of times engaging in unprotected vaginal sex ( $r = .77$ ;  $p = .70$ ).

### **Conclusion**

This study reported the results of analyses to validate an individual-level risk index in a sample of formerly incarcerated individuals recently released from prison. Results showed evidence of convergent and divergent validity. The individual-level index was positively associated with all subscales of the HIV stress scale, depression and drug and alcohol use. The strongest correlation occurred between the index and the HIV instrumental stress subscale. This is unsurprising given the economic themes present in both scales. Furthermore, as expected, the individual-level index was not associated with any of the sexual activity measures. Overall, the individual-level risk index was associated with the measures it theoretically should be, and the index was not associated with measures it theoretically should not be. Given this evidence, I consider the individual-level risk index to be a valid measure of cumulative individual-level risk.

## APPENDIX B: APM Abstraction Form

### DEMOGRAPHICS & CONTACT INFORMATION

1. **Name of Client:** First \_\_\_\_\_ Middle \_\_\_\_\_ Last \_\_\_\_\_
  
2. **Date of intake:** \_\_\_\_/\_\_\_\_/\_\_\_\_
  
3. **Nicknames/Aliases** \_\_\_\_\_
  
4. **Date of Birth:**  
\_\_\_\_/\_\_\_\_/\_\_\_\_
  

- 5. **Sex :**    ☐ Male                      ☐ Female

- 6. **Hispanic or Latino?**    ☐ YES  
   ☐ NO

  
7. **Race:**

<input type="checkbox"/> Black /African American  <input type="checkbox"/> White	<input type="checkbox"/> Asian/Pacific Islander  <input type="checkbox"/> Arab/Chaldean	<input type="checkbox"/> Indian/Native American  <input type="checkbox"/> Other: _____ _____
--	--	--
  
8. **Current Address:**  
 Street \_\_\_\_\_ Apt. # \_\_\_\_\_ City \_\_\_\_\_  
 \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 a.        Whose home is this (*Specify relationship to client*)  
 \_\_\_\_\_  
 b.        Can mail be sent here?    ☐ Yes, Complete        ☐ Yes, Discreet  
          ☐ No
  
9. **Mailing Address:**  
 Street \_\_\_\_\_ Apt. # \_\_\_\_\_ City \_\_\_\_\_  
 \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 a.        Whose home is this (*Specify relationship to client*)  
 \_\_\_\_\_  
 b.        Can mail be sent here?    ☐ Yes, Complete        ☐ Yes, Discreet  
          ☐ No
  
10. **Phone Numbers:**
  - a.        Home \_\_\_\_ Can Message be left?    ☐ Yes, Complete    ☐ Yes, Discreet  
          ☐ No
  - b.        Cell    \_\_\_\_ Can Message be left?    ☐ Yes, Complete    ☐ Yes, Discreet  
          ☐ No

c. Work \_\_\_\_\_ Can Message be left? ☐ Yes, Complete ☐ Yes, Discreet ☐ No

11. Email \_\_\_\_\_ Can Message be left? ☐ Yes, Complete ☐ Yes, Discreet ☐ No

**12. Client Locator Information:**

a. Contact #1: First Name \_\_\_\_\_ Last Name \_\_\_\_\_

Home Phone \_\_\_\_\_ - \_\_\_\_\_ Work Phone \_\_\_\_\_ - \_\_\_\_\_

Cell Phone \_\_\_\_\_ - \_\_\_\_\_

Relationship \_\_\_\_\_

Aware of HIV Status? ☐ Yes ☐ No

Can Message be left? ☐ Yes, Complete ☐ Yes, Discreet ☐ No

Street: \_\_\_\_\_ Apt. # \_\_\_\_\_ City \_\_\_\_\_  
State: \_\_\_\_\_ Zip \_\_\_\_\_

b. Contact #2: First Name \_\_\_\_\_ Last Name \_\_\_\_\_

Home Phone (\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_ Work Phone (\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Cell Phone (\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

Relationship \_\_\_\_\_

Aware of HIV Status? ☐ Yes ☐ No

Can Message be left? ☐

Yes, Complete ☐ Yes, Discreet ☐ No

Street: \_\_\_\_\_ Apt. # \_\_\_\_\_ City \_\_\_\_\_  
State: \_\_\_\_\_ Zip \_\_\_\_\_

REMOVE THIS PAGE BEFORE LEAVING SITE AND STORE SEPARATELY DURING

CLINICAL REVIEW

**13. HIV Status:**

☐ HIV+ Not AIDS

☐ HIV+ AIDS Status Unknown

☐ CDC Defined AIDS

☐ HIV Negative (Affected)

14. Was HIV status verified? ☐ No ☐ Yes – Medical/Labs ☐ N/A  
Affected Client

15. Date of HIV Diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_

16. Date of AIDS Diagnosis: \_\_\_\_/\_\_\_\_/\_\_\_\_

17. ADAP? ☐ Yes ☐ No

18. Are you taking medications? ☐ Yes ☐ No

19. Are you new to taking HIV Medications? ☐ Yes ☐ No

20. When did you first start taking HIV Medications? \_\_\_\_/\_\_\_\_/\_\_\_\_

21. What is your CD4? \_\_\_\_\_ ☐ Unknown

22. When were your last labs done? \_\_\_\_/\_\_\_\_/\_\_\_\_

23. What is your viral load? \_\_\_\_\_ ☐ Unknown

24. Any Opportunistic infections? ☐ Yes ☐ No

a. If yes, List

here \_\_\_\_\_  
\_\_\_\_\_

25. Medical concerns at this time:

\_\_\_\_\_

26. Dental concerns at this time:

\_\_\_\_\_

27. Optical concerns at this time:

\_\_\_\_\_

<b>HOUSEHOLD/LIVING INFORMATION</b>
-------------------------------------

28. Homeless? ☐ Yes ☐ No ☐ Unknown/Unreported

29. Number in Household: \_\_\_\_\_

30. Annual Household Income: \$\_\_\_\_\_

31. Source of Income: \_\_\_\_\_

32. Food Stamps? ☐ Yes ☐ No

33. Are you currently employed? ☐ Yes ☐ No

- a. If yes: ☐ Full Time ☐ Part Time
- b. If yes, where? \_\_\_\_\_
- c. If yes, how long? \_\_\_\_\_

**34. When was client last employed?** \_\_\_\_/\_\_\_\_/\_\_\_\_

**35. Education?** \_\_\_\_\_

- a. **Living Arrangements:** ☐ Permanent ☐ Non-Permanent ☐  
Other (*Specify*) \_\_\_\_\_

**36. Marital Status:**

- ☐ Single Never Married
- ☐ Partnered
- ☐ Married
- ☐ Married but separated  
If separated, how long? \_\_\_\_\_
- ☐ Widowed
- ☐ Divorced

**37. Risk Factors**

- ☐ Heterosexual
- ☐ MSM
- ☐ IDU
- ☐ Prenatal Transmission
- ☐ Hemophilia/Coagulation or Blood Transfusion
- ☐ Recipient of transfusion of blood, blood components, or tissue
- ☐ Other: Explain \_\_\_\_\_

<b>CLIENT SERVICE</b>
-----------------------

**List of Client Needs :**

<b>38. Advocacy:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>39. BHS/ Mental Health Counseling:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>40. Benefits Assistance:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>41. Chore Services:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>42. Clothing:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>43. Criminal Charges:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>44. Crystal Clear Support Group:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>45. Day/Respite Care:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>46. Dental:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>47. Education / GED:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>48. Emergency Financial Assistance:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>49. Employment:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>50. Ex-Offenders Group Referral:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>51. Furniture:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>52. Food:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>53. Guardianship:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>54. HIV Education:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>55. HIV Support Group:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>56. Healthy Relationships APM Support Group:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>57. Home Health Care:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>58. Housing:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>59. Insurance:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>60. Legal Assistance:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>61. Medical HIV:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>62. Medical Non-HIV:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>63. Medications:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>64. Optical:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>65. Parenting Group Referral:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>66. Replace Lost/ Stolen ID:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>67. Risk Reduction:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>68. Spiritual Support:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>69. Substance Abuse:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>70. Transportation:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>71. Utilities:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>72. WAGS Referral for Pets:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>73. Other:</b>	<input type="checkbox"/> Yes	<input type="checkbox"/> No

*If yes, specify:*

## CO-MORBIDITIES

**74.TB:** ☐ Yes ☐ No

a. If yes, receiving  
treatment? ☐ Yes ☐ No

**75.Developmentally Delayed:**  
☐ Yes ☐ No

**77.Hepatitis B:** ☐ Yes ☐ No

**79.Diabetes:** ☐ Yes ☐ No

**81.STIs:** ☐ Yes ☐ No

a. f yes, which STI's (List  
all): \_\_\_\_\_

**82.Mental Health History:**

- ☐ Yes, Active in last 3 months
- ☐ Yes, Not Active in last 3 months
- ☐ Yes, No History

**83.If client has a history of mental health:**

- |  |  |
|--|--|
| <input type="checkbox"/> In Treatment<br><br><input type="checkbox"/> Waiting List for Treatment<br><br><input type="checkbox"/> Refused Treatment<br><br><input type="checkbox"/> Completed Treatment | <input type="checkbox"/> Dropped out of Treatment<br><br><input type="checkbox"/> No Active Treatment or Counseling<br><br><input type="checkbox"/> Not Applicable |
|--|--|

**84.Does the Client want referral for BHS or other counseling?** ☐ Yes  
☐ No

**85.Substance Abuse History :**

- ☐ Yes, Active in last 3 months
- ☐ Yes, Not Active in last 3 months
- ☐ No History

**86.If client has a history of Substance Abuse:**

- |  |  |
|--|--|
| <input type="checkbox"/> In Treatment<br><br><input type="checkbox"/> Waiting List for Treatment<br><br><input type="checkbox"/> Refused Treatment<br><br><input type="checkbox"/> Completed Treatment | <input type="checkbox"/> Dropped out of Treatment<br><br><input type="checkbox"/> No Active Treatment or Counseling<br><br><input type="checkbox"/> Not Applicable |
|--|--|



87. Are you presently using drugs/ alcohol? ☐ Yes ☐ No

88. Do you want drug/ alcohol treatment? ☐ Yes ☐ No

89. Names of drugs using/ used and other notes:

\_\_\_\_\_

\_\_\_\_\_

<b>LEGAL INFORMATION</b>
--------------------------

90. Has client been convicted or held for a crime?

☐ No History

☐ Yes, In a correctional facility in the last 3 months

☐ Yes, In a correctional facility 4 months ago or prior

91. If the client has a history of or any pending legal concerns, or needs referral for legal advice, please explain:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

92. Parole/ Probation Officer Name: First Name \_\_\_\_\_ Last Name \_\_\_\_\_

93. Parole/ Probation Officer Phone Number : (\_\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_

94. Length of Parole/ Probation: \_\_\_\_\_

<b>FOR APM – OFFICE USE ONLY</b>
----------------------------------

95. Date Intake Completed: \_\_\_\_/\_\_\_\_/\_\_\_\_

96. Name of Case Manager Assigned to Case:

First \_\_\_\_\_ Last \_\_\_\_\_

97. Assessment Scheduled :

a. Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

b. Time: \_\_\_\_\_

c. Location: \_\_\_\_\_

98. Letter of Reminder Sent: \_\_\_\_\_

## APPENDIX C: Eligibility Screening Instrument for Interviews

Thanks for calling to find out about the study. My name is [name]. Michigan State University is conducting a research study for the Michigan Department of Community Health. The study is of Partnership Michigan's community re-entry program. The purpose of the research is to find out how people who used the program are doing now. We contacted you because you may have participated in the re-entry program.

As a former client of this program, we would like to hear about your experiences with the program and how you've been doing since then. If you are interested in participating, we would like to interview you, in person, at a time and location that is most convenient for you. The interview will take about 1 to 2 hours and we will pay you \$50 for your time. Everything you tell us will be completely confidential and private.

Would you be interested in participating in the project?

*If no, say "Okay, thanks for your time"*

*If yes, proceed:*

Can I ask you a few questions to confirm that you are eligible to participate? All your responses will be kept completely confidential.

*If no, "Unfortunately, I am unable to determine your eligibility without asking you a few questions. Thank you for your time."*

*If yes, proceed:*

1. Have you been in prison in the State of Michigan at any time in the past 10 years?

\_\_\_ Yes

\_\_\_ No (skip to question 5)

\_\_\_ Not sure (skip to question 5)

\_\_\_ Refused *"Unfortunately, I am unable to determine your eligibility. Thank you for your time."*

2. How many times have you been in prison in the past 10 years? \_\_\_\_\_

In which Michigan prison(s) were incarcerated during the last 10 years?

- a. Alger
- b. Baraga Maximum
- c. Bellamy Creek
- d. Boyer Road
- e. Carson City
- f. Central Michigan
- g. Charles Egeler
- h. Chippewa
- i. Cooper Street
- j. Earnest C. Brooks
- k. Florence Crane
- l. G. Robert Cotton
- m. Gus Harriosn
- n. Ionia Maximum
- o. Kinross
- p. Lakeland
- q. Macomb
- r. Marquette
- s. Michigan Reformatory
- t. Mid-Michigan/Pine River
- u. Mound
- v. Muskegon
- w. Newberry
- x. Oaks
- y. Ojibway
- z. Parnall
- aa. Parr Highway
- bb. Pugsley
- cc. Richard A. Handlon
- dd. Ryan
- ee. Saginaw
- ff. Special Alternative Incarceration
- gg. St. Louis
- hh. Straits
- ii. Thumb
- jj. West Shoreline
- kk. Women's Huron Valley
- ll. Woodland Center

*If none of these facilities are named, go to question 5.*

3. When were you released from (facility named on list above)?

\_\_\_\_\_ (Month) \_\_\_\_\_ (Year)

\_\_\_Refused “*Unfortunately, I am unable to determine your eligibility. Thank you for your time.*”

4. Did you receive help on the telephone from Partnership Michigan to set up health care and other services when you were about to be released?

\_\_\_Yes

\_\_\_No

\_\_\_Not sure

\_\_\_Refused “*Unfortunately, I am unable to determine your eligibility. Thank you for your time.*”

5. What is your name? \_\_\_\_\_

\_\_\_Refused “*Unfortunately, I am unable to determine your eligibility. Thank you for your time.*”

6. What is your date of birth?

\_\_\_\_\_ (Month) \_\_\_\_\_ (Year)

\_\_\_Refused “*Unfortunately, I am unable to determine your eligibility. Thank you for your time.*”

7. What are the last 4 digits of your social security number?

\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

COMPARE ANSWERS TO ELIGIBILITY LIST. Is this person eligible to participate?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

\_\_\_\_\_ Unable to determine due to missing information

For INELIGIBLE (and unable to determine) participants, say:

*“Participants for this research project are selected based on the questions you were just asked. Based on your answers, it turns out you’re not eligible to participate . Thank you for taking the time to speak with me.”*

For ELIGIBLE participants, say:

*“Thank you very much for the information you provided. Based on your answers to these questions, you are eligible to participate in the pilot study. Are you interested in setting up a time to meet?”*

What I’d like to do is set up a time and a place that works best for you. We can come to your home or we could meet in a public place such as a library. Since we’ll be asking you some personal questions, it would be best if we could do the interview somewhere that we can speak privately. When we meet, I’ll tell you more about the purpose of the study. At that time, I’ll ask for your consent to participate or you can decide not to do the interview. Do you have any additional questions about the project right now?

Where would you like to meet?\_\_\_\_\_

What day and time is best?\_\_\_\_\_

In case we need to reschedule, I’m going to give you an 800 number where we can be reached.

*Give participant phone number*

Is there a good phone number to contact you in case the interviewer is lost or delayed in making the interview appointment? \_\_\_\_\_

Could you provide another contact number where I can reach you? \_\_\_\_\_

If there are no more questions, we’ll see you at [time] on [day] at [location]/.

## APPENDIX D: Interview Recruitment Materials

### Letters to Former Clients



2/1/2012

We are writing you to invite you to be part of a research project that will study health services in Michigan and how they can be improved. We are professors at Michigan State University and are conducting this project for the Michigan Department of Community Health.

You were chosen to be in the research because you have used one of the services that we are studying. We are interested in learning about your experiences with this program and whether it has helped you. If you volunteer to participate, you will complete one interview and will be paid \$50 for your time. Any information that you give us will be confidential and private.

For your convenience, we are available to conduct the interview at a location and at a time of your choice. If you are interested in hearing more about this study, please call us, or our assistant, Jason Forney toll-free at 855-678-6785 (1-855-MSU-MSU5) or (517) 353-9217.



College of  
Social Science

Department of  
Psychology

Psychology Building  
East Lansing, MI 48824-1116

Sincerely,

Two handwritten signatures in black ink. The first signature is "Robin Lin Miller" and the second is "Miles A. McNall".

Robin Lin Miller and Miles A. McNall

## Business Cards Left for Former Clients



Jason Forney, Research Assistant

Toll Free: 1-855-678-6785

Office Hours: Tuesdays & Thursdays 9 a.m. – 2 p.m.

*Call Anytime – Calls will be returned promptly*

## Letter to Parole Officer



11/17/2011

Agent Mims  
Oakland/Waterford/Parole/REP  
2709 Pointiac Lake Rd  
Waterford, MI 48328

Dear Agent Mims:

In 2003, Michigan's Department of Community Health established a community re-entry program to assist persons leaving the Michigan state prison system link to appropriate medical care upon their release. This spring, the Michigan Department of Community Health commissioned an independent evaluation of this program to determine how well it does in assisting ex-offenders to remain healthy 3 or more years after their release. This study is led by me and my colleague at MSU, Dr. Miles McNall. The evaluation has been reviewed and approved by the Office for the Protection of Human Subjects at Michigan State University.

We are currently in the process of locating former clients of the program to participate in a confidential interview about the program and their current health and well-being. As you might guess, finding people who were served by this program as long as 8 years ago is quite difficult. Our records indicate that one or more of the people who are eligible to participate in these interviews are currently paroled to your jurisdiction. We are writing to ask if you might help us by making contact with any parolee who is eligible to let him know about the opportunity to be interviewed. Each person who participates will be interviewed at a time and location of his choice. He will also receive \$50 to thank him for his time. Of course, his decision whether or not to contact us or to participate in the study is entirely voluntary.

We have enclosed a letter with hopes that you will pass it on to the person we are trying to locate. Thank you for considering our request.

Sincerely,

A handwritten signature in black ink, appearing to read "Robin Lin Miller".

Robin Lin Miller, Ph.D.  
Professor,  
Michigan State University



College of  
Social Science

Department of  
Psychology

Psychology Building  
East Lansing, MI 48824-1118

Phone: 517-355-0562  
Fax: 517-432-2476  
Website: psychology.msu.edu



## Letter to AIDS Service Agencies



«Mailing\_Date»

«First\_Name» «Last\_Name»

«Organization\_Name\_Jason\_verified\_this\_1»

«Dept»

«Street\_Address» «Suite\_»

«City» «State» «Zipcode»

Dear «Suffix»«Last\_Name»,

In 2003, Michigan's Department of Community Health established a community re-entry program to assist HIV-infected persons leaving the state prison system link to care upon their release. AIDS Partnership Michigan, in collaboration with the Michigan Department of Community Health, has commissioned an independent evaluation of this program. The evaluation is led by me and my colleague, Dr. Miles McNall.



College of  
Social Science

Department of  
Psychology

Psychology Building  
East Lansing, MI 48824-1116

We are currently in the process of locating former clients of the program to participate in a confidential interview about the program and their current health and well-being. As you might guess, finding people who were served as long as 8 years ago is quite difficult. We are writing to ask if you might help us by posting the enclosed flyer in clinics, client bulletin boards, or other areas in your community where people living with HIV are likely to see it. The flyer and all parts of the evaluation have been reviewed and approved by the Office for the Protection of Human Subjects at Michigan State University.

Thank you for your help in getting the word out about the evaluation. Please do not hesitate to contact me if you have questions about the evaluation.

Sincerely,

Sincerely,

A handwritten signature in black ink, appearing to read "Robin Lin Miller".

Robin Lin Miller



Are you a former inmate of a  
Michigan state prison?

Were you released between 2003  
and 2008?

Were you HIV positive or living  
with AIDS when you were  
released?

If you said "yes" to all three questions, you may be eligible to participate in a confidential research study being conducted by Michigan State University about health care. All eligible participants will receive \$50 for their time. Call the toll-free number below to learn more and find out if you are eligible.

Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785
Name: The Re-entry Project Phone:: 855-678-6785

Figure 6. APM Recruitment Flyer.

## APPENDIX E: Interview Consent Form

### Consent Form for Participation of Human Subjects in Research

**Project Title:** Evaluation of the Partnership Michigan Community Re-entry Program

**Primary Investigator:** Dr. Robin Lin Miller, Professor  
Department of Psychology  
Michigan State University  
East Lansing, MI 48824

You are being asked to participate in a research project. Researchers are required to give you a form that tells you about the study, tells you that being in the study is completely up to you, and explains the risks and benefits of being in the study, so that you can make the choice about whether or not you want to participate. You should feel free to ask the researchers any questions you may have.

#### **What is this project about?**

The purpose of this research project is to figure out if the Partnership Michigan's (APM) Community Re-entry program is working. You have been selected as a potential participant in this study because you were listed in the program's records as someone who used it. From this study, we hope to identify the strengths and weaknesses of the program, learn whether people who used it have been able to remain healthy since they were released from prison, and also identify ways in which the re-entry service can be improved to better meet the needs of people who have been in prison and are living with HIV. This research is being done by researchers from Michigan State University (MSU) and is funded by the Michigan Department of Community Health.

#### **What does participating in this project involve?**

We are asking you to consider volunteering to do an interview that will last 1-2 hours. The questions you will be asked during the interview are about your experiences using the re-entry, case management and health care services, your current health status, how you are doing with things such as using drugs and practicing safer sex, and what things have helped or have made it hard for you to take care of yourself since you were released. With your permission, we will audio record your answers so that we do not miss anything that you decide you want to tell us about these things. At the end of the interview, you will receive \$50 to thank you for your participation.

#### **What are the potential risks of participating?**

Participating in this research poses very little risk to you. You may be uncomfortable telling me some things and you may also feel upset thinking about your health or what it is like living with HIV. If there are any particular questions that you do not want to answer, you don't have to; you can stop the interview at any time or ask that certain things you say not be included in the final analysis. Nothing will happen if you decide you want to stop or don't want to answer certain questions.

#### **Are there any benefits?**

You may not benefit directly from participating in the interview. However, what you tell us may be useful to improve the re-entry program and could help Michigan figure out how to do its best to insure the health of formerly incarcerated men and women living with HIV/AIDS.

#### **How will my confidentiality be protected?**

All information that you give us will be kept strictly private and we will protect your privacy to the maximum extent the law allows. Only members of the research team and the people at MSU who are responsible for making sure that the rights of people who participate in research are protected will have access to the information you provide. However, once your information is back at MSU, we will destroy the paper on which we have your name so your name will not be on any of your information and no one will be able to link your name with anything that you say in the interview. Your identity will also not be revealed in any reports of the evaluation findings. The information will be summarized and combined with other people we interview. In all, we expect 100-150 people to be in the study.

This consent form was approved by the Social Science/Behavioral/Education Institutional Review Board (SIRB) at Michigan State University. Approved 05/16/11 – valid through 05/15/12. This version supersedes all previous versions. IRB # 11-456.

The purpose of the audio recording is to supplement our written notes and allow us to type out our conversation. The only people who will listen to the recordings are members of the research team. During the project, the audio file will be stored on MSU's secure computer server temporarily. It will be destroyed after the interview is typed out. If there is any question you would like to answer but would prefer to do so "off the record"; you may ask to have the audio recorder turned off at any time.

Do you agree to allow audiotaping of the interview?

*For Interviewer Use Only:*

☐ Yes ☐ No Interviewer Initials: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

**What are my rights as a participant?**

Participation in this interview is completely voluntary. You have the right to say "no". You also have the right to refuse to answer any question or to stop the interview and end your participation at any time. If you do so, there will be no penalty.

**Who can be contacted with questions?**

If you have concerns or questions about this study, such as scientific issues, how to do any part of it, or to report an injury, please contact the researcher Dr. Robin Lin Miller, Department of Psychology, 134A Psychology Building, Michigan State University, East Lansing, MI 48824-1118. Email: mill1493@msu.edu. Phone: (517) 432-3267.

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail [irb@msu.edu](mailto:irb@msu.edu) or regular mail at 207 Olds Hall, MSU, East Lansing, MI 48824.

**Consent to Participate:**

Do you voluntarily agree to participate in this interview?

*For Interviewer Use Only:*

☐ Yes ☐ No Interviewer Initials: \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

## APPENDIX F: Measures

### A. Patient/Provider Relationships (Bakken, Holzemer, Brown, et al., 2000)

*[Interviewer: If respondent said they are not receiving medical care for HIV on page 7, question 4, skip section F.]* Now we want to ask you some questions about the healthcare provider or doctor who is the main person you see for care related to HIV and your relationship with him or her. Please rate the degree to which each statement is true for you.

	Always	Usually	Sometimes	Never	Refuse
1. My healthcare provider or doctor listens to me.	3	2	1	0	-9
2. My healthcare provider or doctor cares about me.	3	2	1	0	-9
3. My healthcare provider or doctor answers my questions.	3	2	1	0	-9
4. My health care provider or doctor spends enough time with me.	3	2	1	0	-9
5. My healthcare provider or doctor involves me in decisions.	3	2	1	0	-9
6. My healthcare provider or doctor respects my decisions.	3	2	1	0	-9
7. My healthcare provider or doctor deals with my problems	3	2	1	0	-9
8. My healthcare provider or doctor engages me in my care.	3	2	1	0	-9
9. My healthcare provider or doctor is helpful to me.	3	2	1	0	-9
10. My healthcare provider or doctor respects me.	3	2	1	0	-9
11. My healthcare provider or doctor supports my decisions.	3	2	1	0	-9
12. My healthcare provider or doctor sees me when I ask.	3	2	1	0	-9
13. My healthcare provider or doctor provides me with information.	3	2	1	0	-9
14. My healthcare provider or doctor explains things to	3	2	1	0	-9

me in a way that I can understand.					
------------------------------------	--	--	--	--	--

The next few questions are about your visits to the main healthcare provider or doctor who manages your HIV care. Please indicate how strongly you agree or disagree with the following statements.

	<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>	<b>Refuse</b>
15. I make or keep my appointments with my healthcare provider every 3 to 4 months.	1	2	3	4	-9
16. I don't ask my healthcare provider about my treatment options.	1	2	3	4	-9
17. I keep a list of symptoms to tell my healthcare provider.	1	2	3	4	-9
18. I don't write down questions before seeing my healthcare provider.	1	2	3	4	-9
19. I ask my healthcare provider to explain a word that I don't know.	1	2	3	4	-9
20. I'm sometimes too high or dope sick when I go to see my healthcare provider.	1	2	3	4	-9
21. I tell my healthcare provider my symptoms.	1	2	3	4	-9

## **B. Social Support**

In the next few minutes, I would like to get an idea of the people who are important to you in a number of different ways. I will be reading descriptions of the ways that people can be important to us. After I read each description, I will be asking you to give me the first name, initials or nicknames of the people who fit the description. These people might be friends, family, ministers, doctors, or other people you know. I am interested in people you have known for at least a week. So don't mention someone you have just met. If you have questions about the descriptions, please ask me to try to make it clearer.

Intimate Support:

1. If you wanted to talk to someone about things that are very personal and private or if a situation came up where you needed advice, who would you talk to? (*If none, record "00" on the sheet and go to Question 4).*
2. During the last 3 months, which of these people did you actually talk to about things that were personal and private? Which people gave you advice? (*Check about those not mentioned and record total number on answer sheet.*)
3. How satisfied or dissatisfied were you when you did talk to these people about your private feelings or when you were given advice? Were you very satisfied, satisfied, dissatisfied, or very dissatisfied?
4. During the past 3 months, how much to you think you needed people to talk to for advice or about things that were very personal or private?

Physical Support:

5. Who are the people who would give up some of their time and energy to help you – things such as driving you someplace you needed to go, going to the store for you and things like that? (*If none, record "00" on the sheet and go to Question 8).*
6. During the last 3 months, how many of these people actually pitched in to help you with things that you needed some help with? (*Check about those not mentioned and record total number on answer sheet.*)
7. How satisfied or dissatisfied were you with the help you received? Were you very satisfied, satisfied, dissatisfied, or very dissatisfied?
8. During the past 3 months, how much do you feel that you need people who would pitch in to help you do things?

Material Support:

9. If you needed to borrow \$25 or something valuable, who are the people who would lend you money or something of value? (*If none, record "00" on the sheet and go to Question 12).*
10. During the last 3 months, how many of these people actually loaned you something that you needed? (*Check about those not mentioned and record total number on answer sheet.*)

11. How satisfied or dissatisfied were you with the things you were loaned? Were you very satisfied, satisfied, dissatisfied, or very dissatisfied?
12. During the past 3 months, how much do you feel that you needed people who could loan you money or give you things you needed?

Recreational Support:

13. Who are the people you get together with to have fun or relax? *(If none, record "00" on the sheet and go to Question 16).*
14. During the last 3 months, which of these people did you actually get together with? *(Check about those not mentioned and record total number on answer sheet.)*
15. How satisfied or dissatisfied were you with the times that you got together with people just to relax or have fun? Were you very satisfied, satisfied, dissatisfied, or very dissatisfied?
16. During the past 3 months, how much do you feel that you needed people who you could just relax with?

Sexual Support:

17. Who are the people you could go to if you needed information about sex, condoms, and so on? *(If none, record "00" on the sheet and go to Question 20).*
18. During the last 3 months, which of these people did you actually go to for information about something related to sex? *(Check about those not mentioned and record total number on answer sheet.)*
19. How satisfied or dissatisfied were you with the times that people gave you information related to sex? Were you very satisfied, satisfied, dissatisfied, or very dissatisfied?
20. During the past 3 months, how much do you feel that you needed people who you could give you information related to sex?
21. Now, I'd like to get some information about each of the people we have talked about. How old is [name]? *(Record ages for up to 15 persons. If uncertain, ask for best guess. If no information given, record "888".)*



22. What is [name]'s relationship to you?

Father/stepfather .....	1
Mother/stepmother.....	2
Sibling.....	3
Extended family member.....	4
Peer.....	5
Acquaintance.....	6
Formal helper/care provider.....	7
Spouse/partner.....	8
(Don't Know).....	-8

23. Is [name] male or female?

24. You've mentioned a total of \_\_\_\_ people. How many of these people do you think are well informed about AIDS?

\_\_\_\_ (“-88” = doesn't know”)

25. How many of these people have you told that you are HIV positive?

\_\_\_\_ (“-88” = doesn't know”)

Support Members	Intimate		Physical		Material		Social		Sex		Age	Rel.	Sex	
	could	did	could	did	could	did	could	did	could	did			M	F
1.														
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														
11.														
12.														
13.														
14.														
15.														
<b>TOTALS</b>														
<b>SATISFACTION</b>														
<b>NEED</b>														

### C. Demographics

Last, I'd like to ask you some general questions about yourself.

1. How many children do you have? \_\_\_\_\_

IF MORE THAN ZERO ASK: How many children are from each age group?

\_\_\_\_\_ UNDER ONE YEAR OLD

\_\_\_\_\_ 1 TO 5 YEARS OLD

\_\_\_\_\_ 6 TO 12 YEARS OLD

\_\_\_\_\_ OVER 12 YEARS OLD

2. Do you consider yourself to be:

HETEROSEXUAL/STRAIGHT	1
LESBIAN/GAY .....	2
BISEXUAL .....	3
OTHER ( _____ )	4
REFUSED.....	-9

3. What's your educational level now?

LESS THAN HIGH SCHOOL.....	1
HIGH SCHOOL GRAD/GED.....	2
SOME COLLEGE.....	3
ASSOCIATE'S DEGREE (2-year).....	4
BACHELOR'S DEGREE (4-year).....	5
GRADUATE OR PROFESSIONAL DEGREE.....	6
REFUSED	-9

4. Were you employed before your most recent incarceration in the state prison?

YES.....	1
NO.....	2 (skip to question 5)
(Unsure).....	-8 (skip to question 5)

IF YES, ASK:

a. At that time, were you working part-time, full-time, or sporadically (off and on, temporary)?

(FULL-TIME = 35 HOURS PER WEEK OR MORE)

PART-TIME.....	1
FULL-TIME.....	2
SPORADICALLY.....	3
(Not Applicable).....	-8

b. What was your monthly household income from all sources before your last incarceration? (employment, TANF, disability, etc)?

[INCLUDE ONLY RELIABLE INCOME] \_\_\_\_\_

c. How many people did that income support? \_\_\_\_\_

9. Are you employed right now?

YES.....	1
NO.....	2
(Not Applicable).....	-8

IF YES, ASK:

a. Do you work part-time, full-time, or sporadically (off and on, temporary)?

(FULL-TIME = 35 HOURS PER WEEK OR MORE)

PART-TIME.....	1
FULL-TIME.....	2
SPORADICALLY.....	3
(Not Applicable).....	-8

10. What is your current monthly household income from all sources (employment, TANF, disability, etc)

[INCLUDE ONLY RELIABLE INCOME] \_\_\_\_\_

a. How many people does this income support? \_\_\_\_\_

11. Since participating in the re-entry program on (*Interviewer: Remind participant of month and year of their FIRST intake interview with APM*) and since staying at the place where you first lived when you were released, how many times have you moved? \_\_\_\_\_

12. Since that time, were you ever homeless? By homeless I mean: (1) that you did not have your own house or apartment, or (2) that you were living on the streets or in a shelter or (3) that you were staying with friends or family in their apartment and did not pay them rent.

YES..... 1 → If yes, ask 15

NO..... 2 → If no, skip to 16

13. Now I'd like to know how many times you were homeless, for how long, and where you stayed when you were homeless.

a. What was the month and year that you were homeless? (*Write response in column a below*).

b. Where were you staying? (*Write response in column b below*).

c. How many days did this episode of homeless last? (*Write response in column c below*).

(*Record all episodes of homelessness between the date of intake and TODAY*)

	a. Start Date	b. Place	c. Number of days
1 <sup>st</sup> Episode			
2 <sup>nd</sup> Episode			
3 <sup>rd</sup> Episode			
4 <sup>th</sup> Episode			
5 <sup>th</sup> Episode			

14. As far as where you're living right now, do you:

RENT APT OR HOME..... 1

RENT A ROOM..... 2

OWN A HOME..... 3

STAY WITH FRIENDS/RELATIVES.....	4
OTHER (_____).	5

15. How do you feel about your current housing situation?

EXTREMELY SATISFIED.....	1
SATISFIED.....	2
MIXED (EQUALLY SATISFIED & DISSATISFIED).....	3
DISSATISFIED.....	4
EXTREMELY DISSATISFIED.....	5

16. Could you tell me why you feel that way? [PROBE STABILITY & AFFORDABILITY]:

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17. Do you currently have access to reliable transportation, e.g., your car, a friend's car, or the bus?

YES.....	1
NO.....	2

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## REFERENCES

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