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Health outcomes and retention in care following release from prison for patients of an urban post-incarceration transitions clinic

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Abstract

Chronic health conditions are overrepresented among prisoners who often face barriers to medical care following release. Transitions clinics seek to provide timely access to medical care following release. This retrospective cohort study investigated care delivery and health outcomes for recently released prisoners receiving care at the Bronx Transitions Clinic. Among 135 recently released prisoners, median time from release to initial medical visit was 10 days (IQ Range: 5–31). Six-month retention in care was high for HIV-infection (86%), but lower for opioid dependence (33%), hypertension (45%) and diabetes (43%). At six months, 54% of HIV-patients had a suppressed viral load, but fewer buprenorphine-treated patients reduced opioid use (19%), and fewer hypertensive and diabetic patients reached respective blood pressure (35%) and hemoglobin A1c (14%) goals. Access to medical care is necessary but not sufficient to control chronic health conditions. Additional interventions are necessary for formerly incarcerated persons to achieve optimal health outcomes.

The United States has the highest rate of incarceration in the world. As of 2011, seven million Americans were under correctional supervision, including over two million who were held in jail or prison.¹ Chronic diseases, such as HIV-infection, substance use disorders, and non-infectious chronic diseases like diabetes and hypertension, are overrepresented among jail and prison inmates;² however, following release (also referred to as community reentry), formerly incarcerated persons face barriers to medical care, including costs, stigma, and long waiting times, which may result in lapses or cessation of care.^{3–10} Few inmates with chronic diseases receive discharge planning or linkage to care following release, and consequently many fail to engage in medical care.¹¹ During community reentry, most face competing priorities such as securing housing, finding employment, re-establishing relationships with children and other family members, and attending regular parole meetings, as well as, challenges re-establishing medical entitlements that are terminated during incarceration, which may also delay receipt of

medical care. In the 2-week period following release, former prisoners are at a 12-fold increased risk of death,¹² which highlights the need for timely linkage to medical care and preventive services during community reentry.

Efforts to engage and retain formerly incarcerated persons with chronic diseases are also necessary to prevent the worsening of health status that often occurs following release from correctional facilities. The right to medical care for jail and prison inmates has been upheld by the Supreme Court, and guidelines and accreditation are available to promote high quality care.^{13,14} Despite this guarantee, access to and quality of care during incarceration remain sub-optimal; however, because many inmates come from underserved communities, correctional health services may be the only medical care available to them.^{15,16} For HIV-infection, AIDS-related mortality within correctional facilities has decreased in parallel with rates in the community,¹⁷ suggesting effective treatment during incarceration, but community reentry is associated with disruptions in anti-retroviral treatment, increases in HIV viral load, and decreases in CD4 count.^{6,18,19} For opioid dependence, despite evidence that methadone and buprenorphine maintenance treatment reduce opioid use, incarceration, and deaths,^{20–25} few correctional facilities refer to methadone or buprenorphine treatment at release; consequently, more than half relapse to opioid use during community reentry.^{26–29} For chronic non-infectious diseases, the extent and consequences of treatment disruptions following release are not well studied, but primary care utilization and health insurance coverage are low a year after release among those with diabetes, asthma, or other chronic diseases.³⁰ Despite the high need for medical care, qualitative studies suggest that the competing priorities of housing and employment often supersede efforts to seek medical care.^{9,31–33} Incarceration has been recognized as an opportunity to engage at-risk populations in medical care,^{34–38} but without adequate linkage to care in the community, any gains in health status that resulted from healthcare received while incarcerated are likely to be lost.

Post-incarceration transitions clinics have recently emerged to improve access to medical care during community reentry by offering expedited appointments and providing a medical home to formerly incarcerated persons.^{8,39} These clinics are often based in community health centers, and typically offer primary care, patient navigation, and referrals to other social services. Transitions clinics decrease reliance on emergency departments and hospitals for medical care,⁴⁰ but outcomes data from post-incarceration transitions clinics, or other interventions linking formerly incarcerated persons to medical care, have been limited and mostly focused on care utilization, substance use, or re-incarceration, not chronic disease outcomes.^{9,16,30,41,42} Though access to care is important, it is likely that formerly incarcerated persons receiving medical care will still face additional important challenges in achieving optimal health outcomes. Therefore, observational studies of medical care and health outcomes following community reentry are essential to design improved models of care for this population.

In this study, we evaluated medical care delivery at an urban post-incarceration transitions clinic focusing on timely access to medical care, health outcomes, and retention in care for formerly incarcerated persons who were recently released from prison. Findings will be used

for ongoing quality improvement initiatives locally and can provide guidance to other transitions clinics aiming to optimize health outcomes.

Methods

In this retrospective cohort study, we investigated medical care delivery and health outcomes for patients of the Bronx Transitions Clinic (BTC) who were recently released from prison. We first analyzed measures of care delivery; specifically, access to and retention in care. We also determined the factors associated with retention in care. Next, we examined health outcomes for four common chronic diseases (HIV-infection, opioid dependence, hypertension, and diabetes). These chronic diseases were chosen because they require routine follow-up in primary care and are highly prevalent within the transitions clinic population. This study was approved by the institutional review boards of Montefiore Medical Center and the Osborne Association.

Setting

The BTC is a collaboration between Montefiore Medical Center, an integrated health system and academic medical center, and the Osborne Association (OA), a community-based organization that provides reentry services to formerly incarcerated persons. The BTC is located at a Montefiore-affiliated federally-qualified health center serving the Highbridge and Morrisania sections of the Bronx, which have a high prevalence of HIV infection, substance use disorders, and incarceration.⁴³ Services provided include: primary care (including internal medicine, obstetrics and gynecology and pediatrics), specialty care (substance abuse treatment, including buprenorphine,⁴⁴ Hepatitis C treatment, psychiatry, dermatology, podiatry, and dental), and social and behavioral programs (including social work, HIV case management, nutrition services, and Medicaid enrollment). The development of the BTC and more details about the clinic's procedures and patients served has been previously described, but a brief description follows.⁴⁵

During two weekly half-day sessions at the BTC, a generalist physician with experience caring for formerly incarcerated persons provides comprehensive medical care, including care for HIV, opioid dependence and chronic non-infectious diseases, to patients referred from the OA. As part of routine clinical care, all BTC patients with HIV are considered eligible for anti-retroviral therapy (ART) and all patients meeting DSM-IV criteria for opioid dependence and without contraindication to buprenorphine are offered buprenorphine maintenance treatment. Urine drug testing is performed as part of routine clinical care for opioid-dependent patients at the discretion of the treating physician.

A community health worker, who was also formerly incarcerated, provides BTC patients with health education and positive social support, and coordinates care between visits. BTC patients who are also OA clients may receive case management, non-pharmacologic outpatient drug treatment, and cognitive behavioral interventions at community-based OA sites.

Subjects

Electronic medical record (EMR) data were reviewed for patients who received medical care at the BTC between July 2009 and January 2013 and were recently released from prison. Inclusion criteria for this analysis were recent release from prison (90 days before initial visit) and having at least 6 months of potential follow-up (180 days from the initial visit to the end of the study timeframe). We excluded patients who transferred care or were re-incarcerated within six months of their initial visit. Patients with chronic diseases (HIV, opioid dependence, HTN, and DM) were also classified by subgroup as described below. Patients with multiple co-morbidities could be included in more than one subgroup.

Data Collection

We extracted data from two sources—the EMR and the New York State Department of Corrections internet-based incarceration registry.⁴⁶ Information extracted from the EMR included: sociodemographic characteristics, date of first visit, number of visits, presence of chronic diseases (HIV, opioid dependence, HTN, and DM, etc.), prescribed medications (for treatment of HIV, opioid dependence, HTN, and DM), laboratory data (related to HIV, opioid dependence, and DM), and other clinical data (blood pressure readings). Data were extracted to allow for assessment of six month outcomes. Prison release dates were extracted from the internet-based incarceration registry. All data were manually extracted by a physician (ADF) with experience in treatment of HIV infection, opioid dependence, and chronic non-infectious diseases using a standardized instrument that was developed for this study to document visit dates, laboratory data, clinical data, and sociodemographic data.

Measures

The primary outcomes were: 1) the time (in days) between release from correctional facilities and the initial medical visit at the BTC, and 2) the proportion of patients retained in medical care at six months. Six month retention was defined as having a medical visit 180 days after the initial visit. Our secondary outcomes were the disease-specific health outcomes and retention in care that are described below.

HIV-infection—Patients were classified as HIV-infected if EMR data included any of the following: positive immunoassay result for HIV antibody, detectable HIV viral load, or HIV infection documented by a previous medical provider. Similar to other studies,^{47,48} disease-specific health outcomes included: (1) Retention in care (at least one medical visit each quarter [i.e. visits at 0–90 days and 91–180 days following the initial BTC visit]); (2) Prescribed ART (at least one active prescription for combination ART each quarter) and (3) Viral load suppression (at least one HIV viral load of < 75 copies/ml in each quarter).

Opioid dependence—Patients were classified as having opioid dependence if they received at least one prescription for buprenorphine/naloxone. Similar to other studies,^{44,49,50} disease-specific health outcomes were assessed at six months following initiation of treatment (i.e., the date of the first buprenorphine prescription) and included: (1) Retention in care (a medical visit or active prescription at three time points (30–60 days, 90–120 days, and 180–210 days following initiation of treatment); and (2) Reduced opioid use

(50% of urine drug test results without opioids (opiates, methadone, oxycodone) during the six months following initiation of treatment).

Chronic Non-Infectious Diseases—Hypertension and diabetes were chosen as representative chronic non-infectious diseases because they are common in primary care and the BTC population, require ongoing medical management, and treatment goals are well defined.^{51,52}

Hypertension: Patients were classified as having hypertension if they had an elevated blood pressure at the initial visit ($> 140/90$ or $>130/80$ for subjects with diabetes or chronic kidney disease), were prescribed one or more anti-hypertensive medications, or had a diagnosis of hypertension.⁵² Disease-specific health outcomes included: (1) Retention in care (a medical visit 180 days after the initial visit); and (2) Reached treatment goal (blood pressure $140/90$ or $130/80$ (for subjects with diabetes or chronic kidney disease) at the first follow-up medical visit occurring 180 days after the initial visit).

Diabetes Mellitus: Patients were classified as having diabetes mellitus if they had biochemical test results that met American Diabetes Association criteria for diabetes (hemoglobin A1C ≥ 6.5 , fasting plasma glucose ≥ 126 , random blood sugar ≥ 200 with documented symptoms, or abnormal oral glucose tolerance testing), were prescribed insulin or oral hypoglycemic medication, or had a diagnosis of diabetes mellitus type 1 or 2.⁵³ Disease-specific health outcomes included: 1) Retention in care, (a medical visit 180 days after the initial visit); and (2) Reached treatment goal (hemoglobin A1C ≤ 7.0 occurring 180 days after the initial visit).

Other Variables: Sociodemographic characteristics included age, gender, race/ethnicity, and insurance status. Clinical characteristics included presence of other chronic diseases: medical (chronic Hepatitis C, asthma), mental illness (depression, anxiety, bipolar disorder, schizophrenia), and current substance use (tobacco, opioids, cocaine, alcohol).

Analysis

The primary and secondary outcomes are reported as frequencies and percentages. We also conducted a logistic regression to determine factors associated with retention in care after six months. For the logistic regression, retention was the dependent variable, and independent variables included sociodemographic and clinical characteristics. First, using bivariate testing (t-test or chi square), independent variables associated with remaining in care ($p < 0.15$) were selected for the multivariable logistic regression model. Next, logistic regression was performed to determine factors that were independently associated with retention in care and all selected variables were included in the final model.

Results

Of the 150 patients who were recently released from prison and had six months of potential follow-up, 10 were re-incarcerated and 5 transferred care; therefore, 135 patients were included in this analysis. Most were male (97%), Hispanic or African-American (92%), and had Medicaid (65%). Common chronic diseases included HIV infection (21%), opioid

dependence (20%), hypertension (21%), and diabetes (10%). Of the 135 patients, 76% had at least one chronic disease, and of these 102, the mean number of conditions was 3.05 (S.D.: ± 1.56) (see table 1).

Care Delivery Measures

The median number of days between release from prison and the first medical visit was 10 days (IQ Range: 5–31), and 54% were seen within two weeks of release. Overall, 38% of subjects were retained in care at six months, including 45% of those with at least one chronic disease. In regression analysis, the factors associated with retention in care at six months were HIV infection (OR = 5.78, 95% CI = 2.02–16.49) and depression (OR = 3.77, 95% CI = 1.16–12.12), after adjustment for age, race/ethnicity, and insurance status. Of the 102 subjects with chronic diseases, 72% had returned to the clinic at least once for follow-up care within six months of their initial visit.

HIV-infection

Of the 28 patients with HIV-infection, at six months, 86% were retained in care, 82% received anti-retroviral therapy, and 54% had a suppressed viral load (see figure 1a).

Opioid dependence

Of the 27 patients receiving buprenorphine treatment for opioid dependence, at six months, 33% were retained in care, and 19% had reduced opioid use confirmed by urine drug testing (see figure 1b).

Chronic Non-Infectious Diseases

Thirty-six patients had chronic non-infectious diseases (22 with hypertension, 7 with diabetes mellitus, and 7 with both conditions). Of the 29 with hypertension, at six months, 45% were retained in care and 35% had a goal blood pressure (see figure 1c). Of the 14 with diabetes mellitus, at six months, six were retained in care and two had a goal hemoglobin A1c (see figure 1d).

Discussion

For the 135 BTC patients who had recently been released from prison, the clinic provided timely access to medical care, and importantly, more than 70 were seen within two weeks of their release. However, fewer than half of patients were retained in medical care at six months, and many failed to achieve optimal chronic disease outcomes.

The two weeks following release from correctional facilities is a critical period to engage formerly incarcerated persons. Relapse to substance use is common, and for opioid users, tolerance is drastically reduced, which makes them vulnerable to overdose.^{26,54} For those with HIV-infection, cessation of anti-retroviral therapy could lead to the development of viral resistance and potentially increased viral transmission within the community.^{6,55} For those with diabetes, glycemic control can be challenging. Rapid access to medical care, substance abuse treatment, and preventive services, all of which are offered at the BTC, could attenuate some of the increased risk; therefore, the short median time from release to

the initial BTC visit of ten days is a major accomplishment. In North Carolina, HIV-infected prisoners who participated in an intensive case management intervention entered medical care a median of four weeks following their release, but our data is not directly comparable to that study.⁴² The shortage of primary care physicians in the United States is well documented,⁵⁶ but by facilitating timely access to care, it is likely that the BTC prevented treatment delays that otherwise would have occurred.

Once BTC patients initiated care, retention in care and health outcomes were variable. For HIV infection, 82% continued to be seen at recommended intervals, but for opioid dependence, hypertension, and diabetes, more than half had dropped out of care at six months. The positive findings for HIV care were reassuring. Among jail inmates in Connecticut who received case management and referral to community HIV care following release, only 38% were retained in care at six months.⁴⁸ The higher rates of retention for BTC patients was expected because they are a self-selected group who chose to engage in medical care, but our rate of viral load suppression was also impressive; it nearly equaled rates of viral suppression previously reported at other Montefiore clinical sites that provide HIV care (54% vs. 60%).⁵⁷ The more marginal findings for other chronic health conditions are concerning. For opioid dependence, six month retention rates have historically been >50% at the buprenorphine treatment program at the health center where the BTC is located, while ours was only 33%.^{44,49} For hypertension and diabetes, in nationally representative samples, approximately 50% of patients have their condition controlled, while only two of 14 diabetic BTC patients had reached hemoglobin A1c goals.^{58,59} Regression analysis demonstrated that confounding factors, such as depression or lack of health insurance, could not explain the poor rates of retention in these groups; therefore, additional interventions will be necessary to engage and retain all formerly incarcerated persons with chronic diseases.

One possible explanation why retention and health outcomes were worse for BTC patients with opioid dependence, hypertension, and diabetes than for those with HIV, is that supportive services, such as housing programs or case management, which are often available to HIV-patients may not be available for non-HIV patients. Homelessness is common among formerly incarcerated persons,⁶⁰ and is associated with poor health outcomes;³¹ however, in New York City, housing subsidies are more available for homeless HIV-infected persons, while those without HIV often end up in the shelter system. BTC patients had access to housing assistance at the Osborne Association, but with the low availability of affordable housing in New York City, and discriminatory policies toward public housing for formerly incarcerated persons,^{3,61–63} their needs may not have been met. Because we collected data via medical records, we could not measure the prevalence of unstable housing among BTC patients, but anecdotally, many patients described the challenges of storing insulin or following a diabetic diet while in the shelter system. Additionally, co-morbid substance use disorders and mental illness were common among BTC patients with the chronic diseases studied here, and likely influenced the suboptimal outcomes, but due to the small sample size, we could not determine whether these factors accounted for the differences between outcomes for HIV and other chronic diseases. Ultimately, our data should be a reminder for clinicians that access to medical care is necessary but not sufficient to control chronic diseases. Efforts to improve health outcomes

for this population must also address the social conditions to which formerly incarcerated persons are exposed.

In order to address the sub-optimal outcomes that this study documented, we will be conducting several initiatives. A peer-mentorship intervention will support BTC patients receiving buprenorphine treatment; a support group directed at fostering positive coping skills will encourage engagement in care; and our community partner will enhance patient education on management of chronic non-infectious diseases. Additionally, we will continue to advocate for improved housing, food, and employment options for formerly incarcerated persons.

Our study has several limitations. The small sample size, retrospective design, and lack of a comparison group prevent us from drawing definitive conclusions about the impact of the BTC on health outcomes; nonetheless, the challenges with retention are noteworthy and deserve attention. Another limitation is that patients may have transferred their source of care from the BTC to another location without our knowing, therefore, our rates of retention may underestimate the proportion of patients continuing to receive care, and the data on clinical outcomes included in this analysis were only those available in Montefiore's electronic medical record. Third, our collaboration included care coordination and social support from a community health worker, which may not be available at all medical centers. It is unknown whether these services affected retention in care or health outcomes, but it is likely that sites without these services will face even greater challenges with retention in care. And fourth, our study was conducted in a single post-incarceration transitions clinic in New York City and may not be generalizable to other settings.

In sum, we have reported clinically relevant health outcomes among persons receiving medical care at an urban transitions clinic following release from prison. The BTC facilitated entrance into medical care, and with timely access to care, many patients avoided treatment disruptions for HIV-infection, opioid dependence, and chronic non-infectious diseases. Though post-incarceration transitions clinics alone are unlikely to reduce health disparities for formerly incarcerated person, this model of care is worth studying and expanding upon, as identifying a trusted and accessible source of care is a critical step in chronic disease management.

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Figure 1.

Retention in medical care and health outcomes for formerly incarcerated patients (N = 135)

a. HIV (N = 28); b. Buprenorphine treatment (N = 27); c. Hypertension (N = 29); d.

Diabetes Mellitus (N = 14)

Table 1

Characteristics of Recently Incarcerated Bronx Transitions Clinic patients (n=135)

Sociodemographic Characteristics	N (%)
Age (years $\pm$ SD)	42.1 $\pm$ 10.5
Male	131 (97)
Race/Ethnicity	
Hispanic	68 (50)
Non-Hispanic Black	57 (42)
Non-Hispanic Other	10 (8)
Insurance	
Medicaid	88 (65)
Uninsured	46 (34)
Other	1 (1)
Chronic Conditions	
Medical	
HIV	28 (21)
Chronic Hepatitis C	35 (26)
Diabetes Mellitus	14 (10)
Hypertension	28 (21)
Asthma	22 (16)
Substance Use (current)	
Tobacco	84 (62)
Opioids	27 (20)
Other	14 (10)
Mental Illness	
Depression	19 (14)
Other	18 (13)
Any Chronic Condition	
None	33 (24)
1 condition	29 (21)
2–3 condition	53 (39)
4 conditions	29 (15)
Mean ($\pm$ SD)*	3.05 ($\pm$ 1.56)
Care Delivery	
Days from release to first visit (median, IQ range)	10 (5–31)
< 2 weeks	73 (54)
1 visit	
1 chronic condition	74 (73)
No chronic condition	10 (30)
Remained in care at 6 months	
1 chronic condition	46 (45)
No chronic condition	5 (15)

* Of 102 with 1 chronic condition