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Does a Primary Health Clinic for Formerly Incarcerated Women Increase Linkage to Care?

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Abstract

Objective—This study examined a primary care-based program to address the health needs of women recently released from incarceration by facilitating access to primary medical, mental health, and substance use disorder (SUD) treatment.

Study design—Peer community health workers recruited women released from incarceration within the past 9 months into the Women's Initiative Supporting Health Transitions Clinic (WISH-TC). Located within an urban academic medical center, WISH-TC uses cultural, gender, and trauma-specific strategies grounded in the Self-Determination Theory of motivation. Data abstracted from intake forms and medical charts were examined using bivariate and multivariable regression analyses.

Results—Of the 200 women recruited, 100 attended the program at least once. Most (83.0%) did not have a primary care provider prior to enrollment. Conditions more prevalent than in the general population included psychiatric disorders (94.0%), substance use (90.0%), intimate partner violence (66.0%), chronic pain (66.0%), and Hepatitis C (12.0%). Patients received screening and vaccinations (65.9 – 87.0%), mental health treatment (91.5%), and SUD treatment (64.0%). Logistic regression revealed that receipt of mental health treatment was associated with number of psychiatric (AOR=4.09, $p<.01$), and social/behavioral problems (AOR=2.67, $p=.04$), and higher

median income (AOR=1.07, $p=.05$); African American race predicted lower receipt of SUD treatment (AOR=0.08, $p<.01$).

Conclusion—An innovative primary care transitions program successfully helped women recently released from incarceration receive medical, mental health, and SUD treatment. Primary care settings with specialty programs, including community health workers, may provide a venue to screen, assess, and help recently incarcerated women access needed care.

Introduction

The U.S. has the highest incarceration rate in the world, with roughly 1 in every 100 adults residing within jails and prisons (Hughes & Wilson, 2002). As the justice system population has increased, the number of individuals re-entering their communities post-incarceration has correspondingly grown, combining with a lack of appropriate primary healthcare to create public health concerns. Recently released individuals tend to have poorer overall health, are often from medically underserved communities, and experience healthcare disparities typical of poor individuals of color. (Dumont, Brockmann, Dickman, Alexander, & Rich, 2012). These factors likely contribute to a 12.7 times higher mortality rate during the first 2 weeks after release compared to the general population (Binswanger et al., 2007). Moreover, recently released women have a higher relative risk of death compared to recently released men (5.5 vs. 3.3) in the first year after release when both groups are compared to the general population (Binswanger et al., 2007). Lapsed Medicaid coverage, untreated mental health and substance use disorder (SUD) issues, and difficulty accessing primary care can exacerbate these health outcomes (Rosen et al., 2014; Wakeman, McKinney & Rich, 2009; Mallik-Kane & Visser, 2005; Kulkarni, Baldwin, Lightstone, Gelberg, & Diamant, 2010). A multi-disciplinary and integrated primary care approach is imperative to improving the health of formerly incarcerated individuals (Sellers et al., 2012).

Women are the fastest growing members of the incarcerated U.S. population, increasing 646% from 15,118 women in 1980 to 112,797 women in 2010, nearly 1.5 times the rate of increase for men (Cahalan, 1986; Guerino, Harrison & Sabol, 2011). Ninety percent of recently released women have chronic medical, mental health, or substance use disorders, higher than in the general population (Mallik-Kane & Visser, 2005; Schnittker, Massoglia & Uggen, 2012). Recently released women face additional risks: intimate partner violence (IPV), sexual trauma including from justice system employees, and sex work involvement with ensuing medical and psychiatric sequelae (Sartor et al., 2012; Cottler, O'Leary, Nickel, Reingle, & Isom, 2014; Millay, Satyanarayana, O'Leary, Crecelius, & Cottler, 2009). Few treatment programs offer effective trauma- and gender-specific treatment (Grella, Scott, Foss, & Dennis, 2008; Messina, Calhoun & Warda, 2012; Nelson-Zlupko, Dore, Kauffman, & Kaltenbach, 1996) or motivational strategies such as those grounded in Self-Determination Theory (SDT). SDT-informed practices are efficacious in increasing health behaviors such as condom use and smoking cessation, shown to be mediated by patient autonomy and competence (Ng et al., 2012; Deci & Ryan, 1985). Furthermore, autonomy and competence were shown to mediate depression and anxiety symptoms. (Ng et al., 2012; Keatly, Clark & Hagger, 2012).

Most medical practices lack strategies to address the complex needs of recently released individuals (Morse et al., 2014; Flanagan, 2004; Barnert, Perry & Wells, 2014). Specific primary care models can be effective for individuals with SUD and mental health symptomology, but have not been adapted for recently released people (Barnert, Perry & Wells, 2014; Saitz, Horton, Larson, Winter, & Samet 2005; Huffman, Niazi, Rundell, Sharpe, & Katon 2014; Parthasarathy, Merten, Moore, & Weisner, 2003). Other approaches propose bridging justice and health systems and integration of wrap-around services for women, such as childcare, counseling, and employment assistance (Wenzel, Longshore, Turner, & Ridgely, 2001; Paino, Aletraris, & Roman, 2016; Pringle et al., 2002; Oser, Knudsen, Staton-Tindall, & Leukefeld, 2009).

The Transitions Clinic Network (TCN) is an 11-site, 10-state consortium providing culturally-specific primary medical care to recently released individuals, and approximately 14% of its clients are women (Wang et al., 2010; Wang et al., 2012; Fox et al., 2014; Wang, 2016). Formerly incarcerated community health workers (CHWs) provide support and healthcare management, drawing from shared experiences (Wang et al., 2012; Bedell, Wilson, White, & Morse, 2015; Lebel, Richie & Maruna, 2014). WISH-TC is a TCN site and primary care clinic within a local academic medical center's Department of Psychiatry and has additional unique qualities. WISH-TC CHWs are trained in trauma-specific and SDT-based motivational strategies (Ng et al., 2012; Deci & Ryan, 1985; Amaro et al., 2007; Amaro, Chernoff, Brown, Arévalo, & Gatz, 2007). A community advisory board comprised of local stakeholders provides feedback regarding the program, consistent with community-based participatory research (CBPR) strategies (Israel et al., 2010).

The literature is limited with regard to research surrounding health outcomes and utilization trends among women recently released from incarceration. Understanding these women's unique health needs, risks, and factors that promote healthcare utilization are critical for improving clinical interventions targeted toward this population and overall community health. We aim to fill this gap in the literature by presenting findings from a descriptive chart review of patients attending our program, examining the following questions: 1) What proportion of recently released women will voluntarily attend a primary care transitions program? 2) What are patient characteristics and health conditions (e.g. medical, psychiatric, and SUD)? 3) What percent of patients receive recommended care, and what patient characteristics are associated with receipt of care?

Material and Methods

Recruitment

The PI and a CHW publicized the initiative at collaborative community post-incarceration programs in a mid-sized city in upstate New York, seeking stakeholder input (Israel et al., 2010), access to qualifying women, and referrals. Community health workers also offered WISH-TC program participation through weekly visits to women in the local jail, prison, probation office, parole office, women's transitional housing programs, an SUD inpatient treatment program, and diverse community agencies serving recently released people between September 2012 and August 2014. Eligible women either had been released from incarceration within 9 months or were scheduled to be released within 2 months.

Recruitment occurred through advertising, approaching women in varied locations, and advising varied community leaders and providers, meaning that some women called to make appointments and some were given appointments upon release. Because recruitment strategies evolved over time with community and patient feedback (Israel et al., 2010), to assess recruitment strategy effectiveness, we ran statistical tests to compare means/counts across all screener (demographic) data to 1) compare attendees vs. non-attendees and 2) compare year 1 to year 2. We further explored statistically significant associations. The University of Rochester Research Subjects Review Board approved the current study as a minimal-risk chart review and quality improvement analysis not requiring informed consent.

Data collection and variables of interest

An intake form provided the following information: age, address, and recruitment location. Additional demographics and the rest of the data were collected from the system-wide electronic medical record database using i2b2®, a query tool (Murphy et al., 2010), and manual searches of patient records, laboratory results, and physician notes from September 1, 2012 through December 31, 2014.

Variables of interest comprised five categories: (a) clinic recruitment outcomes; (b) sociodemographic characteristics; (c) medical, mental health, and behavioral health conditions; (d) substance use; and (e) patient receipt of recommended testing, cancer screenings, pneumococcal vaccinations, and mental health and SUD treatment. Variables for recruitment outcomes included whether enrolled patients attended WISH-TC in Year 1 or 2, and the number of clinic visits per patient. Sociodemographic variables included: age, race/ethnicity, ZIP code (proxy for median income), partner status, sexual preference, intake site, and whether patients previously had a primary care provider (PCP) (some patients expressed dissatisfaction with their current provider and sought to establish care with WISH-TC instead).

For WISH-TC participants only, we quantified patients' physical, mental, and behavioral health diagnoses on clinical grounds, according to their visit diagnoses and problem lists. In addition, social history sections of new patient physicals and the medical record revealed gender and sexual identity, trauma history (including IPV), education level, birth control methods, smoking status, and lifetime substance use history. Each patient completed a new patient form that asked about a lifetime history of IPV and the provider also performed a standardized screen of each patient at the first visit (Feldhaus, Koziol-McLain, Amsbury, Lowenstein, & Abbott, 1997). Upon intake and at subsequent visits (as indicated) the provider asked patients about sexual activity since prior assessment, condom use, and number of partners, yielding a diagnosis of unprotected sex as applicable. At each visit, clinic protocol requires staff to ask patients about presence and frequency of cigarette smoking status and document it in the social history of the electronic record; quitting or reducing smoking were coded according to changes from enrollment. These data are presented in Table 2, along with condition estimated prevalence rates in the general US adult population.

Women with mental health conditions and SUD were referred to the academic medical center's Department of Psychiatry or community treatment sites. If the only treatment

indicated was medication from the PCP (e.g. anti-depressant medication), this was considered treatment and receipt of treatment was defined as attending one follow-up appointment after the medication was prescribed. Women were referred for mental health treatment according to clinical criteria as follows: women wanting counseling instead of or in addition to medication, inadequate response to primary care medication management, prior lack of response to multiple medications, and a diagnosis of uncontrolled serious mental illness. Women who were referred for psychiatric care within the academic medical center utilized a two-session rapid referral to a psychiatrist (within 2 months), including the option of a psychiatrist who specializes in caring for pregnant women. The psychiatrist who saw those women provided medication recommendations to the PCP. For women referred to counseling, appointments were available within 6 weeks. The Psychiatry Department has a specific outpatient program for individuals with serious mental illness (eg schizophrenic or delusional) to which our few patients meeting those criteria were referred and seen within 3 months.

Each patient's number of recommendations for testing, screenings, and mental health and SUD treatment (through primary care, the academic medical center, or community agencies) was recorded, as well as receipt of these services during the study period. Screenings and vaccination recommendations were based upon the US Preventive Services Task Force recommendations (2015, 2016) and were facilitated by electronic record prompts in the system. Some women had been referred to or attended mental health or SUD treatment prior to beginning treatment with WISH-TC and this was not adjusted for, but was only included as receipt of services for our purposes if services were received during the study period. Receipt of mental health and SUD services was defined here as attending at least one session. Women diagnosed with opioid use disorder were offered buprenorphine treatment if they made an appointment in an SUD program and their urine toxicology screen did not indicate use of benzodiazepines since there is a potential interaction of these two medications.

Data analysis

Univariate analyses (a) quantified the proportion of study participants who voluntarily attended WISH-TC (b) provided descriptive statistics for demographic, medical, psychiatric, lifetime substance use, and behavioral characteristics of the sample, and (c) described receipt of recommended treatments (Glaze & James, 2006). We conducted χ^2 and t-tests for categorical and continuous variables to assess differences between the women who attended the program and those who did not (Wang et al., 2012). An exploratory bivariate analysis examined associations between sociodemographic characteristics, health diagnoses, and patient outcomes. We calculated Pearson correlations and substituted rank-based Kendall's tau correlation coefficients when appropriate (Fredricks & Nelsen, 2007). Lastly, logistic regression described the extent to which summary variables (total physical health, mental health, social/behavioral health, and substance use), age, race, ethnicity, and median income (in thousands of dollars to account for the smaller effect estimates) predicted receipt of mental health and SUD treatment for women who attended WISH-TC ($n = 100$). Diagnostic tests of the 4 summary variables revealed no multicollinearity, so all were included in the

model. All tests assessed for two-tailed significance at the $p < 0.05$ level using SPSS® Version 22 (Nie, Bent & Hull, 1975).

Results

Recruitment outcomes

Over the 2-year period, 200 women were recruited from 11 different county sites. Of these, 100 (50%) attended WISH-TC at least once. More women, particularly Caucasian women, were successfully recruited by CHWs during Year 2 than Year 1 (56.5% vs. 39.5%; $p = 0.02$); however, there was no significant difference in our ability to recruit African American women during Years 1 and 2 (32.4% vs. 46.0%; $p = 0.22$). Ten percent of women who attended WISH-TC identified as Hispanic, consistent with the local jail's statistics (12%) (Ignarri, 2015). While most women only attended WISH-TC once, the average number of visits was 4.4 (SD = 3.4; range = 1–16; median = 3), and 39 women attended 5 or more visits.

Sociodemographic information

The women who attended WISH-TC ($n = 100$) did not differ significantly ($p > 0.05$) from non-attendees with regard to age, race/ethnicity, median income, and partner status (Table 1). Four women died during the study, evenly split between both groups (data included).

Of the 100 attendees, 85 reported being heterosexual, 5 lesbian, and 10 bisexual. Most women were recruited at the local jail or prison (43%), transitional housing (25%), and community supervision (i.e. probation, parole) (19%). A large proportion (83%) of attendees lacked a PCP before enrolling in WISH-TC.

Baseline medical, psychiatric, behavioral, and substance use diagnoses

On average, patients were diagnosed with 3.3 physical health conditions (SD = 2.0, range: 0–10), 1.4 behavioral health issues (defined as IPV, child abuse, or unprotected sex) (SD = 0.8, range: 0–3), and 2.5 mental health conditions (SD = 1.4; range: 0–6). For most diagnoses and lifetime substance use, prevalence among WISH-TC attendees was higher compared to the U.S. general population (Table 2). Common diagnoses and behavioral issues included mental health disorder (94%), chronic pain (66%), IPV (66%), unprotected sex (43%), suicide attempt or ideation (17%), and Hepatitis C (HCV) (12%). On average, patients had ever used at least 2.1 psychoactive substances (SD = 1.2; range: 0–5). At baseline, nearly all (91%) used tobacco; however, during the study, 47.3% ($n = 43$) of smokers reduced their use in the process of quitting and 15.4% ($n = 14$) successfully quit.

Receipt of recommended testing, cancer screenings, and immunization

Orders were placed for Hepatitis A/B/C/HIV testing and pneumococcal vaccinations for nearly all patients (85–90%), and for STI testing for more than half of patients (54%) (Table 3). For Hepatitis A/B/C/HIV testing and pneumococcal vaccinations, 66–69% of those orders resulted in completed testing, while 87% completed recommended STI testing. Screening mammograms (aged 40 or older), colonoscopies (aged 50 or older), and pap smears (aged 21–65 with a cervix and no prior related cancer) were ordered based on U.S.

Preventive Services Task Force recommendations (2015 & 2016). Of those orders the following were received: 5 (29.4%) of 17 had a colonoscopy (see Table 3 which includes national averages of receipt); 23(53.6%) of 43 had a mammogram; and 65 (68.4%) of 95 had a pap smear.

Receipt of mental health and SUD treatment

Eighty-six (91.5%) of the 94 patients with mental health diagnoses received mental health treatment (Table 3). Regarding substance use, a majority of our patients needed SUD treatment, and appointments took longer (up to 3 months) for inpatient or outpatient treatment, both inside and outside our Department. Sixty-four percent ($n = 57$) of the 89 patients who reported substance use received SUD treatment. Cocaine was the most commonly abused substance ($n=63$), with 35 (55.6%) of those patients participating in SUD treatment. Thirty (78.9%) of the 38 women with opioid use disorder received methadone or suboxone.

Results from the bivariate and multivariate analyses are in Tables 4 and 5, respectively for $N=100$ women. Logistic regression revealed as the total number of mental and social/behavioral issues increased by 1 unit, there was a nearly 4.1 and 2.7 times greater odds of receiving mental health treatment, respectively (AOR = 4.085; 95% CI = 1.662–10.039; $p < 0.01$ and 2.671; 1.027– 6.948; $p = 0.04$). Income was associated with mental health treatment: for each additional \$1,000 of median income the odds of receiving mental health treatment increased by 6.5%. Additionally, African American women had 91.8% lower odds of receiving SUD treatment compared to Caucasian women (AOR = 0.082; 95% CI = 0.027–0.245; $p < 0.01$). However, Caucasian and African American women differed significantly in terms of substance use; 97% of the Caucasian women had a SUD history, compared to only 74% of participating African American women. Moreover, Caucasian women used an average of 2.4 substances, while African American women averaged 1.6 substances ($p < 0.01$). In the adjusted model, the total number of physical health problems, age, ethnicity, median income, and recruitment location did not significantly predict receipt of mental health or SUD treatment.

Discussion

There is a lack of research regarding health status, health service utilization, and corresponding health outcomes among women recently released from incarceration. This descriptive paper helps to illuminate these public health concerns. Our WISH-TC program is described with regard to recruitment strategies, practice strategies, patient characteristics, and receipt of treatment. We successfully enrolled and engaged 100 recently released women with a primary care clinic using cultural, gender, and trauma-specific processes and SDT-based motivational strategies. Over the two-year period studied, WISH-TC attendance increased by 17%. The prevalence of mental health, physical health, SUD, and behavioral health conditions compared to the general population confirmed the need for targeted programs. The program was successful in increasing women's receipt of needed testing, screening, and treatment.

The success of recruitment for women in need of services in the three most common sites (prison/jail, transitional housing, and community supervision) highlights the potential of health-corrections-community collaboration, combined with trained providers and CHWs who find patients where they are housed and receive services. Our analysis provided support for our program model, as there was an association between need of treatment and receiving needed treatment for those participating in WISH-TC.

While we found a moderate correlation between number of medical problems and WISH-TC attendance, recently released individuals have difficulty accessing health care for myriad reasons (Morse et al., 2014; Blankenship, Friedman, Dworkin, & Mantell, 2006; Morse, Silverstein, Thomas, Bedell, & Cerulli, 2015). For example, women have the financial and emotional demands of caring for children, transportation, job seeking, and legal fines and fees which may keep them from attending to their health needs. Also the Affordable Care Act Medicaid provision was not implemented in all states and may be changing. Medicaid can be inactivated by months-long sanctions in all states (e.g., if screens show illegal substances), paradoxically impeding SUD treatment. These combined factors suggest that multidisciplinary providers with specialized training such as that found in transitions clinics must be part of wider changes to improve healthcare access.

As in these data, the prevalence of mental health diagnoses is very high among incarcerated individuals, especially women (Glaze & James, 2006; Abram, Teplin & McClelland, 2003). The high prevalence of depression among WISH-TC patients supports integrating the treatment of depression within primary care (Katon et al., 1995; Unutzer et al., 2002). Unfortunately, under-treatment of depression while incarcerated is common (Cuddeback, Scheyett, Pettus-Davis, & Morrissey, 2010) and individuals are often released from incarceration with few or no medications and lack ongoing psychiatric treatment. WISH-TC is based in a Department of Psychiatry, facilitating psychiatric and SUD referrals. However, many referred women did not receive this treatment, which is perhaps related to the long wait time for SUD services and Medicaid needing to be reestablished. These problems highlight the challenges of navigating the complex healthcare system.

We chose specific strategies to address gender, stigma (through being provided by peers and providers trained to work with recently released women), trauma, and motivation for health behavior changes due to this population's complex needs. We believe our primary care transitions program is the first to incorporate trauma-specific primary care for recently released women. While this pilot study of WISH-TC supports an integrated system of primary care in a Department of Psychiatry, future studies should investigate additional expedited care models for the high-risk population of recently released women and whether trauma-specific care improves outcomes.

Condomless sex and drug use, which are more common among recently released women than the general population, increase the risk of sexually transmitted infections and cervical cancer (Binswanger, Blatchford, Lindsay, & Stern, 2011; Zhu, Cai, Guo, Zhou, & Guo, 2015). We prioritized screening and referral for these conditions, finding that approximately 43% and 90% of women engaged in condomless sex and substance use, respectively. Research shows that less than 66% of those with HIV receive needed care and only 43% for

HCV (Gardner, McLees, Steiner, del Rio, & Burman, 2011; Yehia, Schranz, Umscheid, & Re III, 2014).

Our patients have a high prevalence of HCV, over 10 times that of the general population. Women may prefer to address these stigmatizing infections in culturally-specific programs such as WISH-TC (Saha et al., 2013). New HCV treatments can provide a cure in 12 weeks with greatly reduced side effects and new medications can prevent HIV transmission (American Association for the Study of Liver Diseases-Infectious Diseases Society of America); recently released women are a priority for these public health concerns and a transitions clinic could help to address barriers to care. Our patients reported higher prevalence rates of childhood abuse, IPV, and sexual trauma compared to the general population of women, though these social issues can be underreported (Sartor et al., 2012; Engstrom, El-Bassel & Gilbert, 2012). Trauma-specific and trauma-informed care are beneficial, but not widely practiced in primary care, SUD treatment, mental health treatment, or in primary care practices serving patients with psychiatric comorbidities (Jennings, 2004; Brown, Harris & Fallot, 2013; Gunn et al., 2015).

Chronic pain was our patients' most frequent diagnosis, and 38% of those patients had a diagnosis of opioid use disorder. Recent studies indicate that receiving outpatient prescriptions for opioids is a common avenue to heroin dependence and eventual overdose, as is non-medical use of prescription opioids (Dunn et al., 2010; Bohnert et al., 2011; Banerjee et al., 2016). Opioid use disorder and overdose are rising and becoming more common among Caucasian than African American patients (Bohnert et al., 2011). Reasons for the increasing use among Caucasian relative to African American individuals are not entirely known but may relate to Caucasian patients being better treated for pain with opioids and having better access to healthcare (Mars, Bourgois, Karandinos, Montero & Ciccarone, 2014; Maxwell, 2015; Joynt et al., 2013). This trend mirrored our findings with regard to improved receipt of SUD treatment for Caucasian patients combined with what appeared to be more severe SUD; however, the results may be influenced by the existence of confounding or mediating variables not included in the regression model. For example, we did not include regular attendance at 12-step meetings as SUD treatment or distinguish between primary care, inpatient, or outpatient treatment. We did not ask all patients if they had an overdose history or ask those who reported them the causative substance(s). In future studies, we will examine these details and assess racial/ethnic correlations. Our findings highlight the need for prompt and appropriate treatment of both chronic pain (which could include non-opioid therapies) and opioid use disorder among individuals of all backgrounds.

Our outcomes are primarily health service access-related. Future studies should evaluate medical, mental health, and substance use outcomes to help determine whether this model of care leads to improvements. Others have found decreased health care costs through utilization of the transitions clinic model of care, and health outcomes are still under evaluation (Wang et al., 2012; Fox et al., 2014).

Our study has a number of strengths related to our partnerships and access. We used CBPR strategies with broad participation of racially and ethnically diverse community and corrections stakeholders and leaders, including people working directly with incarcerated

and formerly incarcerated women (Israel et al., 2010), promoting recruitment and feedback. Our correctional collaborations allowed us to connect with medically underserved women pre-release, and if they were re-incarcerated, promote relationships that build trust over time. Additionally, we were able to treat or refer patients with mental health conditions to specialists in the context of a primary care practice housed in a Psychiatry Department.

Limitations include our uncontrolled pilot program evaluation study design that prevented us from comparing those who did or did not complete the intake, and among those who completed the intake, those who did or did not attend the clinic. The uncontrolled pilot used clinical diagnoses rather than a prospective study with validated measures of mental health symptoms and SUD. Our numbers did not allow us to control for type of substance used or exact mental health diagnosis, particularly since many had both anxiety and depression and used more than one substance. Also regarding outcomes, patients participated in the program for different amounts of time, giving some more opportunity to complete appointments and procedures for which they received referrals. We chose to operationalize certain outcomes to systematically collect data and account for differing amounts of time enrolled in the clinic (e.g. 'receipt of treatment' was defined as attending a treatment session at least once following provider recommendation to account for those who enrolled near the end of the study period), but alternative approaches may have yielded different findings. This study was not designed to determine the impact of our program on healthcare utilization or clinical outcomes. A randomized clinical trial would be better suited to exploring utilization or outcomes attributable to the program, and its design would need to address varying lengths of incarceration time before enrollment, participants' different levels of legal involvement and/or mandates (e.g. parole or probation), and participants' varied baseline experiences with healthcare services, including treatment for substance use disorder and other mental health conditions. Since documentation was not standardized, data on some patients may be less complete. . Examining WISH-TC in general primary care practices with extra training for providers would be an appropriate next step to expand availability and generalizability.

Implications for practice and/or policy

A primary care program using trauma and culturally-specific SDT-based motivational strategies for women recently released from incarceration succeeded in recruiting, medically evaluating, and linking half to primary care, and the majority of those received needed procedures and referrals. Most attendees did not initially have a PCP prior to this intervention and prior research demonstrates a greatly increased risk of death among recently released women. We believe these findings provide lessons learned for policy makers to support examining the efficacy of similar models of primary care for women recently released from incarceration. We note the relatively long wait time for women to get into SUD treatment and this has two practice and policy implications: 1) more SUD treatment slots are needed to decrease wait times; and 2) PCPs should receive additional training to provide medication to treat SUDs either in a program such as ours or in general practice. The relatively long time to get into mental health treatment and high risk of the post-incarceration period support a practice of PCPs prescribing previously adequate mental health medications while patients await psychiatric appointments.

The women in our program received outreach during incarceration and after incarceration where they were located in their communities from a peer CHW who provided support and navigation assistance. Other research supports the use of CHWs and navigators in additional populations with multiple medical conditions (Bedell, Wilson, White, & Morse, 2015; Findley, Matos, Hicks, Chang, & Reich, 2014). Yet CHWs are generally not a billable service in the United States and are not widely available despite evidence of effectiveness. Our study and others support randomized trials to examine whether practice and policy changes should promote and pay for the widespread use of CHWs, particularly among those at high medical risk and with disparities in healthcare access.

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Appendix

The contents of this publication are solely the responsibility of the authors and do not necessarily represent the official views of the U.S. Department of Health and Human Services or any of its agencies.

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The primary investigator had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

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Table 1

Sociodemographic characteristics of patients ($n = 200$) recruited to WISH-TC from September 2012 – August 2014.

	Patients Attending WISH-TC ($n = 100$)	Patients Referred to WISH-TC But Did Not Attend ($n = 100$)	
	<i>n/% or Mean \pm SD</i>	<i>n/% or Mean \pm SD</i>	<i>p</i>
<u>Age</u>	38.3 \pm 11.2	35.7 \pm 11.0	0.12
Range	21–62	19–59	
<u>Race/Ethnicity</u>			0.11
Non-Hispanic Caucasian	56	37	
Non-Hispanic African American	32	50	
Non-Hispanic Other	2	1	
Hispanic Caucasian	3	5	
Hispanic African American	3	2	
Hispanic Other	4	5	
<u>Median Household Income (\$)</u>	36,299 \pm 15,914	33,919 \pm 14,552	0.28
<u>Partner Status</u>			0.31
Married	7	4	
Single	75	84	
Divorced/Separated	13	11	
Widowed	2	1	
Living with same-sex partner	3	0	
<u>Sexual Orientation</u>			–
Heterosexual	85	<i>na</i>	
Homosexual	5		
Bisexual	10		
<u>Intake Site</u>			–
Local Jail or Prison	43	<i>na</i>	
Transitional Housing/Shelters	25		
Community Supervision	19		
Patient's Residence	7		
Community Agencies	6		

na Data not available (no medical chart access granted)

Table 2

Prevalence of selected diagnoses, conditions, and substance use in WISH-TC sample ($n = 100$) and corresponding prevalence estimates for the general population.

Diagnosis/condition	WISH-TC prevalence	General population prevalence	Reference
	n/%	%	
<u>Physical health</u>			
Chronic pain	66	11	Nahin, 2015
Obesity	59	41	Ogden, Carroll, Kit, & Flegal, 2014
Obese	42	35	Ogden, Carroll, Kit, & Flegal, 2014
Morbidly obese	17	6	Ogden, Carroll, Kit, & Flegal, 2014
Asthma/COPD	39	8	Blackwell, Lucas, & Clarke, 2014
Vitamin D deficiency	35	42	Forrest & Stuhldreher, 2011
Vaginosis	30	29	Koumans et al., 2007
Trichomoniasis	5	3	Sutton et al., 2007
Hypertension	20	29	Nwankwo, Yoon, Burt, & Gu, 2013
Abnormal pap smear/cervical dysplasia	19	7	Chesson et al., 2013
Pregnancy	18	10	Curtin, Abma, Ventura, & Henshaw, 2013
Abortions	3	1	Pazol, Creanga, & Jamieson, 2015
High cholesterol	18	32	Mozaffarian et al., 2015
Arthritis	17	23	Barbour et al., 2013
Diabetes	15	9	CDC, 2014
Hepatitis C (HCV)	12	1	Edlin, Eckhardt, Shu, Holmsberg, & Swan, 2015
Hypothyroidism	8	4	Vanderpump, 2011
Sexually transmitted infections (STIs)	8	4	Eggleston et al., 2011
Human papillomavirus	6	5	Markowitz et al., 2013
Renal disease	2	<1	Coresh et al., 2007
HIV/AIDS	1	1	Hall et al., 2015
<u>Social/behavioral health</u>			
Intimate partner violence (lifetime)	66	33	Brieding, Chen, & Black, 2014
Unprotected sex during treatment time	43	<1	Smith et al., 2015
Child abuse (lifetime)	30	25	Finkelhor, Turner, Shattuck, & Hamby, 2013
<u>Mental health</u>			
Any mental health diagnosis	94	25	Reeves et al., 2011
Depression	86	7	Pratt & Brody, 2008
Anxiety	66	18	Kessler, Chiu, Demler, & Walters, 2005
Bipolar disorder	28	3	Kessler, Chiu, Demler, & Walters, 2005
Posttraumatic stress disorder	27	4	Kessler, Chiu, Demler, & Walters, 2005
Suicide attempts/ideation (lifetime)	17	4	Crosby, Gfroerer, Han, Ortega, & Parks, 2011

Diagnosis/condition	WISH-TC prevalence	General population prevalence	Reference
	n/%	%	
Attention deficit hyperactivity disorder	16	3	Fayyad et al., 2007
Eating disorder	4	2	Hudson, Hiripi, Pope, & Kessler, 2007
Schizophrenia	1	1	Regier et al., 1993
<u>Substance use (lifetime)</u>			
Any mind-altering substance	89	15	Merikangas & McClair, 2012
Tobacco	91	19	CDC, 2011
Reduced smoking	43	40	CDC, 2011
Quit smoking	14	6	CDC, 2011
Alcohol	45	28	Willenbring, Massey, & Gardner, 2009
Illicit substances			
Cocaine	63	2	UN Office on Drugs & Crime, 2015
Marijuana	55	42	Degenhardt et al., 2008
Opioids	38	2	SAMHSA, 2014
Prescription drug misuse	10	5	Becker, 2009

Table 3

WISH-TC patient receipt of (a) pneumococcal vaccination, infectious disease, and sexually transmitted infection (STI) testing; (b) cancer screenings; (c) mental health treatment; and (d) substance use disorder (SUD) treatment from September 2012 – December 2014 ($n = 100$).

Testing/screening	Testing/screening/treatment recommended <i>n</i>	Completed testing/screening/treatment <i>n</i> (%)
<u>Pneumococcal vaccination, infectious disease, and STI testing</u>		
Hepatitis A testing	85	56 (65.9)
Hepatitis B testing	90	61 (67.8)
Hepatitis C (HCV) testing	87	60 (69.0)
HIV testing ⁱ	85	58 (68.2)
STI testing	54	47 (87.0)
<u>Cancer screeningsⁱⁱ</u>		
Pap smear	95	65 (68.4)
Mammogram	43	23 (53.6)
Colonoscopy	17	5 (29.4)
<u>Mental health treatment</u>	94	86 (91.5)
<u>Substance use disorder (SUD) treatment</u>		
Cocaine	63	35 (55.6)
Opioids	38	30 (79.0)
Alcohol	45	23 (51.1)
Marijuana	55	16 (29.1)

ⁱFour patients openly declined testing for HIV

ⁱⁱThe U.S. national averages for completing pap smears, mammograms, and colonoscopies are 69%, 67%, and 65%, respectively (CDC, 2014; Joseph, King, Miller, Richardson, & CDC, 2012).

Table 4

Exploratory bivariate analysis results ($n = 100$).

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	–	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.351	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
2. Race: Caucasian		–	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.363	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.497	<i>ns</i>
3. Race: African American			–	<i>ns</i>	<i>ns</i>	–0.360	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	–0.492	<i>ns</i>
4. Number of visits				–	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.342	<i>ns</i>	0.426	<i>ns</i>	<i>ns</i>	<i>ns</i>
5. Cocaine use					–	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
6. Opioid use						–	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
7. Any substance use							–	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	0.389	<i>ns</i>
8. Total number of physical health problems								–	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
9. Total number of mental health problems									–	<i>ns</i>	0.347	<i>ns</i>	<i>ns</i>
10. Reduction in smoking										–	<i>ns</i>	<i>ns</i>	<i>ns</i>
11. Linkage to mental health treatment											–	<i>ns</i>	0.500
12. Linkage to SUD treatment												–	<i>ns</i>
13. Depression													–

ns denotes non-significant ($p > 0.05$) correlations; all other bolded correlations are significant at the $p < 0.01$ level

Table 5

Logistic regression estimates of the effects of physical, social/behavioral, and mental health problems and demographics on linkage to mental health and substance abuse treatment for WISH-TC patients ($n = 100$).

Parameter	Linkage to mental health treatment					Linkage to substance abuse treatment				
	Estimate	Adjusted odds ratio	95% confidence interval			Estimate	Adjusted odds ratio	95% confidence interval		
			Lower bound	Upper bound	<i>p</i>			Lower bound	Upper bound	<i>p</i>
Total number of physical health problems	-0.208	0.812	0.557	1.186	0.28	0.138	1.148	0.875	1.507	0.32
Total number of social/behavioral health problems	0.983	2.671	1.027	6.948	0.04	0.108	1.114	0.624	1.992	0.72
Total number of mental health problems	1.407	4.085	1.662	10.039	< 0.01	0.319	1.375	0.928	2.038	0.11
Age	0.019	1.019	0.951	1.093	0.59	0.000	1.000	0.952	1.050	0.99
Race: African American ^{<i>i</i>}	0.924	2.520	0.466	13.623	0.28	-2.507	0.082	0.027	0.245	< 0.01
Race: Other ^{<i>j</i>}	3.212	24.836	0.596	1035.076	0.09	-1.424	0.241	0.029	2.034	0.19
Ethnicity (Hispanic)	2.155	0.116	0.010	1.299	0.08	-0.576	0.470	0.070	3.146	0.44
Income (in thousands of dollars)	0.063	1.065	0.999	1.134	0.05	-0.003	0.997	0.966	1.029	0.87

^{*i*}Reference group is Caucasian.