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Extended-release naltrexone for opioid use disorder started during or following incarceration

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ABSTRACT

A western Massachusetts county jail began initiating extended-release naltrexone (XR-NTX) prior to release from incarceration and linking participants to community treatment providers upon release. Program barriers prevented the start of XR-NTX prior to release for a subset.

Methods: This report consists of the initial 67 jail releasees with opioid dependence, 47 who received XR-NTX before release, and 20 after release. Utility of the program was assessed by determining medication addiction treatment (MAT) retention rates at 4, 8, and 24 weeks.

Results: Forty-seven commenced XR-NTX approximately 7 days prior to release, and 20 were referred to commence XR-NTX at outpatient treatment centers. Rate of retention at week 4 was higher in group with treatment initiation prior to release as compared to those started in community: week 4: 55% (24 XR-NTX + 2 agonist MAT out of 47) versus 25% (4 XR-NTX + 1 agonist MAT out of 20) ($p = 0.03$); week 8: 36% (13 XR-NTX + 4 agonist) versus 25% (3 XR-NTX + 2 agonist) ($p = 0.41$); week 24: 21% (6 XR-NTX + 4 agonist) versus 15% (1 XR-NTX + 2 agonist) ($p = 0.74$). Three patients died, all in the pre-release group, all from overdose at 3–5 months after release and 2.5 or more months after stopping XR-NTX, compared to none of 20 in community group ($p = 0.55$). Limitations include that cohorts were non-random and observational; substance use could not be consistently determined; and overdose deaths in MA occurred partly in clusters, limiting historical comparisons.

Conclusions: Receiving XR-NTX prior to jail release for opioid use disorder appears to increase the treatment retention rate as compared to commencing after release. The treatment attrition and striking rate of overdose deaths are concerning, and support expanded availability of opioid agonist treatments prior to release and other evidence-based supports and retention strategies in the community.

1. Introduction

The prevalence of opioid use disorder in jail and prison populations is well above the general population, with an estimated 24% to 36% of opioid-dependent adults in the US cycle in and out of jails each year (Rich et al., 2005; Substance Abuse and Mental Health Services Administration, 2013) and are at high risk of opioid relapse and overdose death following release (Merrall et al., 2010). Several studies have shown that when medication addiction treatment (MAT), including methadone (Rich et al., 2015; Kinlock et al., 2009), buprenorphine (Gordon et al., 2014; Zaller et al., 2013), and extended-release naltrexone (XR-NTX, Vivitrol®) (Lee et al., 2016; Lee et al., 2015), are accessible during and after incarceration, treatment retention improves and rates of relapse decline.

We report on an opioid addiction treatment pilot program designed to promote addiction recovery through implementation of extended-release naltrexone treatment in a collaboration involving jail and community-based centers in the Hampden County, MA region. We used a multi-faceted approach to treatment with use of extended-release naltrexone during pre-release, alongside counseling and continued treatment with community-based providers. During the start-up of this program, the education, counseling and referral to community treatment components were in place without availability of naltrexone prior to release, resulting in a comparison of naltrexone initiation before vs. after release.

2. Methods

This was a prospective cohort of the initial 67 incarcerated individuals who met the criteria for opioid use disorder, and referred themselves to

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Table 1
Participant Characteristics.

	XR-NTX begun prior to release Mean (Range) or N (%)	XR-NTX planned after release
N	47	20
Age	32.9 (22–60)	34.6 (21–54)
Male	42 (89.4)	18 (90)
Female	5 (10.6)	2 (10)
Race/ethnicity		
Black/African American	3 (6.4)	0
Hispanic/Latino	12 (25.5)	8 (40)
White	32 (68.1)	12 (60)
Other	0	0
Prior sentences	3.6 (0−13)	5.7 (0–19)*
LSI-SV score	5.2 (1–8)	5.6 (2–7)
TCU-DS2 score	8.3 (4–9)	7.9 (3–9)
Released to parole/e-monitoring	18 (36.7)	5 (25.0)
Interval (days)		
From release to first appointment	2.7 (0−21)	2.4 (0−12)
1st XR-NTX before/after release	−6.8 (−2–−13)	4.4 (0–13)
From 1st to 2nd XR-NTX	31.9 (25–52)	33.0 (27–43)

LSI-SV = Level of Service Inventory- Short Version, TCU-DS2 = Texas Christian University Drug Screen Version II.
*$p = 0.04$ unpaired, two-tailed *t*-test. All other comparisons were not significant (*t*-test or Fisher's test).

the pilot XR-NTX MAT program at the Hampden County Correctional Centers (HCCC) (Conklin, Lincoln, & Flanigan, 1998; Lincoln et al., 2006) from April 2013 to December 2014. This represents a small fraction of those with passing through the facility with opioid use disorder (22% of the population reported non-medical use of opioids on the Level of Service Inventory, and 40% of the population had an opioid use disorder listed in the medical record in a system with about 5000 releases annually). (HCCC data, 3/16/15).

General criteria for participation were patient request, no short-term plans for opioid agonist, not pregnant, release to area served by collaborating community program, a transportation plan, no acute hepatitis, no uncontrolled bleeding disorder, liver transaminases <5-fold upper normal, platelets $>90 \times 10^9$/L, no opioid use in over 10 days, not allergic to XR-NTX, and mental health and understanding sufficient for informed consent. Urine toxicology was tested before XR-NTX administration, and for community starts, naloxone or oral naltrexone was administered before XR-NTX. Patients were followed after release from jail at CleanSlate Addiction Treatment Centers and Baystate Brightwood Health Center where they continued treatment and counseling. Buprenorphine treatment was also available at these community sites.

During sequential program start-up periods at the 3 sites, or due to referrals to program with insufficient time to complete safety screening, XR-NTX was not yet available to be started prior to release, and these patients were referred to start XR-NTX in the community.

All patients had Medicaid insurance and community appointments arrangements prior to release. XR-NTX was donated by the manufacturer (Alkermes) to the correctional centers. At the time of this cohort, neither buprenorphine nor methadone was available to start prior to release.

Utility of the program was assessed by determining MAT retention rates at 4, 8, and 24 weeks (on XR-NTX, buprenorphine, or methadone per community program reports). Overdose deaths were determined by continued contact between HCCC program staff and patients, their mutual contacts, and community health providers. The results were analyzed using two-tailed Fisher's test and *t*-tests.

Data was gathered and tracked for ongoing HCCC program quality improvement. With the patients' written consents, the program community and correctional staff case conference and review program status every 1–2 months, and the correctional center maintains contact with patients, and designated family and friends through its after-incarceration programs.

3. Results

Of the 67 participants, 47 (70%) were commenced on XR-NTX approximately 7 days prior to release. The remaining 20 participants (30%) were referred to commence XR-NTX at outpatient addiction treatment centers. See Table 1 for details of participant characteristics and timing of events. Other than the number of prior sentences, there were no significant differences between the groups. In the post-release group, the first community appointment was a median of 2 days after release, and the first XR-NTX injection was a median of 10 days after release.

The rate of retention at week 4, 8 and 24 weeks was higher in the group who initiated treatment prior to release as compared to those who started in the community. During week 4, 55% (24 XR-NTX + 2 agonist MAT out of 47) of those who initiated treatment prior to release were retained in treatment versus 25% (4 XR-NTX + 1 agonist MAT out of 20) in those who initiated treatment in the community ($p = 0.03$). At week 8, the difference was 36% (13 XR-NTX +4 agonist) versus 25% (3 XR-NTX + 2 agonist) ($p = 0.41$). And at week 24, the difference was 21% (6 XR-NTX +4 agonist) versus 15% (1 XR-NTX +2 agonist) ($p = 0.74$) (Tables 2 and 3).

Three of the 47 (6%) participants in the pre-release group died from overdose, which occurred 3–5 months after release and 2.5 or more months after stopping XR-NTX. There were no overdose deaths in the group that initiated treatment in the community.

4. Discussion

Our report adds to the previous literature that shows that receiving extended-release naltrexone prior to release from jail for opioid use disorder appears to increase treatment retention as compared to commencing treatment after release. The difference in treatment retention was seen up to 4 weeks post-release. During week 8 and 24, this difference diminished and was not significant.

In comparison to other reports, somewhat higher retention rates at the second (first in community) injection were achieved in two randomized trials of XR-NTX prior to release, one from New York City jails (75% versus our result of 55%) (Lee et al., 2015), and another of HIV-infected correctional population (61%) mainly in Connecticut and also HCCC (Springer, Brown, Di Paola, & Altice, 2015), after prison

Table 2
Treatment participation.

	XR-NTX begun prior to release $n = 47$			XR-NTX planned after release $n = 20$		
	Yes	No/Unknown	BUP/MTHDN	Yes	No/Unknown	BUP/MTHDN
Received 1st XR-NTX	47 (100%)	0	0	7 (35%)	12 (60%)	1 (5%)
Received 2nd XR-NTX	24 (51%)	21 (45%)	2 (4%)	4 (20%)	15 (75%)	1 (5%)
Received 3rd XR-NTX	13 (28%)	30 (64%)	4 (9%)	3 (15%)	15 (75%)	2 (10%)
Received 6th XR-NTX	6 (13%)	37 (79%)	4 (9%)	1 (5%)	17 (85%)	2 (10%)
Switched to BUP	8 (17%)			3 (15%)		

XR-NTX = extended release naltrexone, BUP = buprenorphine, MTHDN = methadone.

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