Disclosures

No commercial support, or conflicts of interest to disclose other than employment/positions:

- Baystate Health, Springfield MA
- Medical Director, Hampden County Correctional Center
- CODAC Behavioral Healthcare, Rhode Island
- UMass School of Medicine, Baystate
- Tufts University School of Medicine
Discuss use and benefits of all FDA approved medications for opioid use disorder within correctional settings:

- how each of the medications work,
- methods of administration
  - dosing, assessment, other clinical considerations
- patient selection
Overdose risk after incarceration

Individuals with history of incarceration

✧ 54% were considered to have an opioid use disorder

✧ Compared to the rest of the adult population, the opioid-related overdose death rate is 120 times higher for persons released from prisons and jails

Table 2. Characteristics of Individuals Incarcerated in Rhode Island From January 1 to June 30, 2016, and From January 1 to June 30, 2017

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>First 6 mo of 2016</th>
<th>First 6 mo of 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission for incarceration, No.</td>
<td>4822</td>
<td>4512</td>
</tr>
<tr>
<td>Release from incarceration, No.</td>
<td>4005</td>
<td>3426</td>
</tr>
<tr>
<td>No. of inmates receiving MAT monthly, mean (SD)</td>
<td>80 (18)(^a)</td>
<td>303 (39)</td>
</tr>
<tr>
<td>No. of inmates receiving a specific MAT drug monthly, mean (SD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>4 (3)</td>
<td>119 (15)</td>
</tr>
<tr>
<td>Methadone</td>
<td>74 (16)</td>
<td>180 (25)</td>
</tr>
<tr>
<td>Naltrexone</td>
<td>2 (1)</td>
<td>4 (1)</td>
</tr>
<tr>
<td>Naloxone kits dispensed at release from incarceration, No.</td>
<td>72</td>
<td>35</td>
</tr>
</tbody>
</table>

Abbreviations: MAT, medications for addiction treatment; RIDOC, Rhode Island Department of Corrections.
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Decedents With Recent Incarceration, No. (%)</th>
<th>Overall No. of Decedents, (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>First 6 mo of 2016</strong> (n = 26)</td>
<td><strong>First 6 mo of 2017</strong> (n = 9)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>24 (92.3)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>2 (7.7)</td>
<td></td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>25 (96.2)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1 (3.8)</td>
<td></td>
</tr>
<tr>
<td>Age, y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-29</td>
<td>8 (30.8)</td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>9 (34.6)</td>
<td></td>
</tr>
<tr>
<td>40-49</td>
<td>6 (23.1)</td>
<td></td>
</tr>
<tr>
<td>≥50</td>
<td>3 (11.5)</td>
<td></td>
</tr>
<tr>
<td>Died of overdose attributed to fentanyl</td>
<td>16 (61.5)</td>
<td></td>
</tr>
<tr>
<td>Length of incarceration, median (IQR), mo</td>
<td>30 (4-70)</td>
<td></td>
</tr>
<tr>
<td>Time since release from incarceration to death, median (IQR), d</td>
<td>112 (12-223)</td>
<td></td>
</tr>
<tr>
<td>Died within 30 d of release from incarceration</td>
<td>10 (38.5)</td>
<td></td>
</tr>
</tbody>
</table>

\(26 \text{ to } 9 = 65\% \text{ reduction in fatal overdoses}\)

\(10 \text{ to } 1 = 90\% \text{ reduction in fatal overdoses within 30 days of release}\)

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\(^a\) Recent incarceration = within 12mo of release from RIDOC
Intrinsic Activity of OUD Medications

- **full agonist** (e.g. morphine, methadone)
- **partial agonist** (buprenorphine)
- **antagonist** (naloxone, naltrexone)
Methadone

- Full opioid agonist
- Certified OTPs only (or hospital/clinic license with other condition including pregnancy)
- Liquid, powder, tablets
- Oral daily dosing
- Most studied MOUD
- Half-life ~ 15-60 Hours
- Significant respiratory suppression and potential respiratory arrest in overdose
- Cardiac (QT prolongation -> Torsades arrhythmia)
- Medication interactions (sedation, QT prolongation)
Methadone accumulates

- Dosing must be individualized based on careful patient assessment and generally should not be increased every day, because plasma methadone levels do not reach steady state until about five methadone half-lives.

- SAMHSA TIP 63
Methadone

- Patients who miss more than 3-4 doses must be reassessed. The next methadone dose should be decreased substantially and built back up gradually. It may be necessary to restart the dose induction process from Day 1.
Methadone continuation versus forced withdrawal on incarceration in a combined US prison and jail: a randomized, open-label trial.

Figure 2. Probability of attending a methadone clinic in (A) intention-to-treat and (B) as-treated populations at 1 month follow-up after release from incarceration.

For 12 month follow-up: Brinkley-Rubinstein, L. et al., Drug Alcohol Depend 2018
12 month follow up of methadone treatment of arrestees- a RCT

✎ 225 detainees in Baltimore treated for opioid withdrawal, randomized to:
   1. interim methadone with patient navigation,
   2. interim methadone, or
   3. enhanced treatment-as-usual.
      - Participants in both interim methadone groups were able to enter standard methadone treatment upon release,
      - Enhanced treatment-as-usual group received an assessment/referral number.

✎ Significantly more participants in the interim methadone groups were in treatment 30 days post-release compared to enhanced treatment-as-usual

✎ By month 12, no significant differences in enrollment in any kind of drug treatment

✎ No significant differences for opioid-positive tests, although all groups reported a sharp decrease in heroin use from baseline

✎ Five fatal overdoses, 1-2 in each group. None occurred during methadone treatment.

Buprenorphine

- Partial opioid agonist
- Certified OTPs or by prescriber with “X-waiver” (or hospital/clinic license with other condition including pregnancy)
- Daily sublingual film, tablets, bup alone or coformulated with naloxone. 5-20 min. absorption.
- Monthly XR depot injection. 6-month implant.
- Half-life ~ 24-36 Hours
- Medication interactions – sedation, but significantly less than methadone
Precipitated Withdrawal

- Full agonist (e.g. morphine, methadone)
- Partial agonist (buprenorphine)
- Antagonist (naloxone, naltrexone)
Buprenorphine

- Precipitated withdrawal if on opioid agonist
- Excellent medication for most opioid withdrawal
  - Cannot be used in early period of methadone withdrawal
- Naloxone in coformulations
  - Not significantly absorbed sublingually.
  - Decreases likelihood of injection and intranasal use.
- Sublingual absorption usually 5-15 minutes
### Table 6: Comparison of Buprenorphine Mean Pharmacokinetic Parameters Between Sublingual and Extended-Release Buprenorphine

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Buprenorphine sublingual tablet daily</th>
<th>Buprenorphine extended-release (Sublocade)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Means, ng/mL)</td>
<td></td>
</tr>
<tr>
<td>C-avg</td>
<td>1.71</td>
<td>2.19</td>
</tr>
<tr>
<td></td>
<td>2.91</td>
<td>3.21</td>
</tr>
<tr>
<td></td>
<td>2.19</td>
<td>6.54</td>
</tr>
<tr>
<td>C-max</td>
<td>5.35</td>
<td>5.37</td>
</tr>
<tr>
<td></td>
<td>8.27</td>
<td>4.88</td>
</tr>
<tr>
<td></td>
<td>10.12</td>
<td></td>
</tr>
<tr>
<td>C-min</td>
<td>0.81</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td>1.54</td>
<td>2.48</td>
</tr>
<tr>
<td></td>
<td>5.01</td>
<td></td>
</tr>
</tbody>
</table>

# Exposure after 1 injection of 300 mg MIB following 24 mg SLB stabilization
* Steady-state exposure after 4 injections of 100 mg or 300 mg MIB, following 2 injections of 300 mg MIB
Reliance on willpower and fear of dependency often led participants to favor medication-free treatment. However, following relapse, BMT was seen as an acceptable treatment option that had the potential to prevent reincarceration, especially among participants who had positive experiences or impressions of buprenorphine.

Naltrexone

- Opioid antagonist ("blocker")
- Any prescriber can prescribe
- Daily self-admin oral without benefit in community studies
- 4 week XR depot gluteal intramuscular 4mL injection.
- Adverse events: precipitated opioid withdrawal, injection site (pain, abscess), liver, insomnia, mood
XR-naltrexone

- Over past few years, has been the only MOUD available in most Massachusetts facilities
- Extended-release bridge to community treatment
- Evidence of reduce rates of relapse w/ naltrexone when compared to “usual care”.
- PCRCT in releasees w/ OUD & HIV -> improved viral suppression
- No evidence of reduced mortality.
- Largest study involving justice-involved patients recruited those with preference for “opioid free” treatment.
- Patient interest? Only 4 of 303 chose naltrexone in RI correctional setting when given options for other therapies.
- Induction in community has been barrier to use (also inside…)
- Rates of treatment continuation have been low in MA.

Green, Traci C., et al. "Postincarceration fatal overdoses after implementing medications for addiction treatment in a statewide..." JAMA Psychiatry 2018
● Systematic review and meta-analysis of 1045 patients across eleven studies (ten randomized controlled trials, one quasi-experimental study) of NTX for the treatment of OUD among criminal justice involved individuals.

● Improved retention in treatment \((RR = 1.31; 95\% CI: 1.05, 1.63)\),

● Reduced rates of reincarceration \((RR = 0.70 [0.54-0.92])\),

● Reduced opioid relapse \((RR = 0.63 [0.53-0.76])\), and

● Improved opioid abstinence \((RR = 1.38 [1.16-1.65])\).

● Associated with a greater burden of adverse events overall \((RR = 1.49 [1.13-1.95])\), but inconclusive as to whether or not a difference was present for the number of serious adverse events or overdoses.

Bahji, A. et al. Addiction 2019
Medication costs

- Average (per patient) daily cost of MMT is $16 and the total treatment cost for an average treatment episode is $689. These costs are generally in-line with non-jail-based MMT programs of similar size. Daily cost estimates range from $12 to $26 depending on the size of the treatment facility. – Brady et al. The American Journal of Drug and Alcohol Abuse 2018

Costs vary but examples for “ballpark” of medication alone:

- Methadone 10mg tablets: 100mg/day = $0.90/day
- Buprenorphine 8mg generic tablets: 16mg/day = $2.88/day
- XR-buprenorphine (Sublocade) 300mg $1327* = $44/day
- XR-naltrexone (Vivitrol): $1571* = $56/day

*AWP
Many patients have significant experience, track record, preference.

Examples of each medication “working” where others have not. Often described NTX -> BUP -> methadone

Transitional and community resources

Comparative medication studies – most with population differences from general correctional populations
Forced withdrawal while incarcerated is a barrier to subsequent treatment.
Harms of forced withdrawal without MOUD at incarceration for patients with opioid use disorder

✧ Withdrawal:
  – Risk with other medical conditions, other concomitant substance withdrawal
  – Decision making re: legal and other life choices
  – Suicide risk
  – Fear of resuming MOUD in community

✧ Disrupted treatment:
  – Less likely to resume MOUD
  – Overdose risk when treatment disrupted and not on MOUD
### Medication continuation in community

#### Examples

✧ **Methadone RCT: Enrollment in OUD treatment**


<table>
<thead>
<tr>
<th></th>
<th>1 mo</th>
<th>3 mo</th>
<th>6 mo</th>
<th>12 mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interim Methadone + Pt Nav</td>
<td>63%</td>
<td>57%</td>
<td>52%</td>
<td>40%</td>
</tr>
<tr>
<td>Interim Methadone</td>
<td>56%</td>
<td>47%</td>
<td>52%</td>
<td>27%</td>
</tr>
<tr>
<td>Enhance Tx As Usual</td>
<td>26%</td>
<td>19%</td>
<td>24%</td>
<td>29%</td>
</tr>
</tbody>
</table>

✧ **Local experience: on same MOUD** (Hampden Co, MA)

<table>
<thead>
<tr>
<th></th>
<th>1 mo</th>
<th>2 mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buprenorphine</td>
<td>79%</td>
<td>56%</td>
</tr>
<tr>
<td>Naltrexone</td>
<td>53%</td>
<td>41%</td>
</tr>
</tbody>
</table>
Community re-entry challenges

- Competing priorities: housing, food, family, parole, other medical needs
- Stigma, trauma
- Relapse
- Needed for continuing care:
  - Transportation
  - Picture identification
  - Insurance
  - Appointments:
    - **Methadone**: next day,
    - **Buprenorphine**: it depends, bridge prescriptions
    - **XR-naltrexone**: weeks for dose, but engage sooner
Medication Guidance & Procedures

- Procedure for Continuation Patient: newly committed patient reporting current MAT (Medication Assisted Treatment) in the community
- Missed Dose Procedure
- Procedure for New Induction Patient: newly committed patients reporting opiate use and not currently on MAT
- Procedure for Pre-Release Patient: sentenced inmates not on MAT, and requesting induction prior to release
- Dose evaluations
- Pregnant Patients
- Electrocardiograms (EKGs)
- Switching Medications
- Additional Program Requirements
Resources on Rx for OUD in Corrections


✧ California Health Care Foundation MAT in County CJ Settings Project. https://www.chcf.org/project/medication-assisted-treatment-in-correctional-settings/


Thank you!
Working with communities to address the opioid crisis.

- SAMHSA’s State Targeted Response Technical Assistance (STR-TA) grant created the Opioid Response Network to assist STR grantees, individuals and other organizations by providing the resources and technical assistance they need locally to address the opioid crisis.

- Technical assistance is available to support the evidence-based prevention, treatment, and recovery of opioid use disorders.

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 Working with communities to address the opioid crisis.

- The Opioid Response Network (ORN) provides local, experienced consultants in prevention, treatment and recovery to communities and organizations to help address this opioid crisis.
- The ORN accepts requests for education and training.
- Each state/territory has a designated team, led by a regional Technology Transfer Specialist (TTS), who is an expert in implementing evidence-based practices.
Contact the Opioid Response Network

✧ To ask questions or submit a request for technical assistance:

- Visit www.OpioidResponseNetwork.org
- Email orn@aaap.org
- Call 401-270-5900