Results of a Simulated Economic Modeling Study Suggest that Medication for Opioid Use Disorder (MOUD) May Be a Lifesaving and Cost-Saving Intervention[1]

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Estimated Costs and Outcomes Associated With Use and Nonuse of Medications for Opioid Use Disorder During Incarceration and at Release in Massachusetts

Simulation Results of the Model Showed:

Offering all three US Food & Drug Administration (FDA)–approved forms of MOUD at intake:

Averted 192[a] overdose deaths

Was less costly than an extended-release (XR) naltrexone-only at exit of facility strategy

The XR naltrexone-only at exit of facility strategy:

Averted 95[b] overdose deaths

Design

The model[c] considered a closed cohort of 30,000 simulated incarcerated individuals with opioid use disorder (OUD), with the following exposures:

1. No MOUD provided during incarceration or at release
2. XR naltrexone offered only at release
3. All three forms of MOUD[d] offered at intake

Patient data were populated using five years of data from the Massachusetts Public Health Data (MA PHD) Warehouse. Some of the main outcomes of this study were fatal overdoses and cost.

Limitations

- Factors affecting overdose were not simulated in their entirety due to their inherent complexity
- Some model parameters remain uncertain or may not be accurate for every context
- The model did not simulate the details of MOUD adherence, but the data used to populate the model may help to mitigate the impact of this bias
- The simulation did not consider benefits and costs of cognitive behavioral therapy (CBT) with MOUD[e]
- Demographic inputs are based on the Massachusetts population only.

Model Parameters[f]

Simulated Population Demographics[g] and Epidemiology

- Gender: 68% male
- Mean age: 37 years
- Proportion with injection drug use at baseline: 25%
- Proportion actively using drugs at baseline: 84%
- Mortality ratio for drug use: injection vs. non-injection drug users
- Movement into corrections (monthly rate)
- Corrections length of stay (weeks)
- Linkage to MOUD after corrections: by medication type
- Retention in MOUD treatment at six months: by medication type
- Overdose monthly rate: by medication type vs. no medication, rate in corrections, and post-treatment
- Fatal overdose rate

Simulated Healthcare Costs[h]

- Weekly treatment (visit and medication) by medication type
- Overdose at baseline: fatal ($858), nonfatal ($4,557),[i] and weekly incarceration ($840)[j]

These modeled findings[k] suggest that offering all three forms of FDA-approved MOUDs during incarceration may be a lifesaving, cost-effective intervention.

a Range: 156–200 overdose deaths
b Range: 85–169 overdose deaths
c Researching Effective Strategies to Prevent Opioid Death (RESPOND).
d Naltrexone, buprenorphine, and methadone.
e It is generally accepted that best practice includes CBT alongside MOUD. This may be referred to as medication-assisted treatment (MAT).
f Data were simulated over a five-year period and assumed no MOUD treatment initiations in corrections.
g MA PHD is the primary data source for demographic characteristics and treatment-seeking parameters.
h Costs are based on 2019 US dollars.
i Costs were based on publications from 2013–2017 with appropriate adjustments.
j Cost is based on the 2021 Federal Register.
k Additional study outcomes, such as treatment start and retention, are not reported here.

Reference:

1. Chatterjee A, Weitz M, Savinkina A, et al. Estimated Costs and Outcomes Associated With Use and Nonuse of Medications for Opioid Use Disorder During Incarceration and at Release in Massachusetts. *JAMA Netw Open*. 2023;6(4):e237036. doi:10.1001/jamanetworkopen.2023.7036

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