Predictors of opioid and alcohol pharmacotherapy initiation at hospital discharge among patients seen by an inpatient addiction medicine consult service

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• Dr Englander has no relevant conflicts of interest.
Background

• Medications for opioid use disorder (MOUD) and alcohol use disorder (MAUD) are effective and under-prescribed.

• Hospital-based addiction consult services provide a key opportunity to engage non-treatment-seeking adults and initiate MOUD, MAUD.

• Further, hospital admission is a high risk touch point associated with increased risk for overdose and death. Medication can reduce this risk.

Jones AJPH 2015
Velez JGIM 2017
Englander JGIM 2019
Larochelle 2019
Background

• Understanding which patients are most likely to initiate MOUD and MAUD can inform interventions, help address treatment gaps, and deepen understanding of hospitals’ role in addressing substance use disorders.
Background

• Our hospital has an interprofessional addiction medicine consult service (IMPACT) that includes care from addiction medicine physicians, advanced practice providers, social workers, and peers with lived experience.

• IMPACT meets patients admitted for general medical/surgical care.

• IMPACT offers MOUD and MAUD to all patients with moderate-to-severe opioid and/or alcohol use disorder.
Study Objective

• To determine factors associated with MOUD and MAUD initiation during hospitalization.
Study Design and setting

• Cohort study of patients enrolled in the Improving Addiction Care Team (IMPACT) study at an urban academic medical center in Portland, Oregon
Participant eligibility

• Hospital providers and social workers refer patients with known or suspected SUD to IMPACT, regardless of readiness to change or interest in SUD treatment.

• All participants had:
  • Were referred to IMPACT and enrolled in the IMPACT study between September 2015 and August 2018
  • Moderate to severe opioid use disorder, alcohol use disorder, or both
  • Were not already receiving MOUD or MAUD upon hospital admission
Study Procedures and Data sources

• Early in hospitalization, a research assistant administered an in-person survey.
  • Included demographics, substance use patterns, social factors

• At discharge, IMPACT clinical members completed a case closure form.
  • Included information about patients’ diagnoses, hospital course, and treatment plan

• Research assistants validated case closure form information by medical record review.
Measures

• Selected potential covariates based on *a priori* hypotheses and face validity, including gender, race, income, housing status, partner with substance use, rural residence, history of methadone maintenance, usual source of primary care
Outcome:

• In-hospital initiation of MOUD, MAUD, or both
  • MOUD included methadone, buprenorphine (including buprenorphine-naloxone), and naltrexone.
  • MAUD included naltrexone, acamprosate, disulfiram, and gabapentin.
  • Excluded medication if there was no plan to continue after hospital discharge (e.g. methadone for withdrawal only).
Data analysis

• Backwards stepwise elimination with a relaxed p-value of 0.20 to build a logistic regression model to estimate the relationship of baseline participant characteristics with the binary outcome variable MOUD and/or MAUD initiation
### Participant characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n=346</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years (SD)</td>
<td>43.5 (13)</td>
</tr>
<tr>
<td>Male gender (n=343)</td>
<td>218 (63%)</td>
</tr>
<tr>
<td>Non-Hispanic white</td>
<td>280 (81%)</td>
</tr>
<tr>
<td><strong>SUD Type</strong></td>
<td></td>
</tr>
<tr>
<td>Opioids</td>
<td>219 (63%)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>166 (50%)</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>104 (30%)</td>
</tr>
<tr>
<td>Current Homelessness (n=340)</td>
<td>192 (56%)</td>
</tr>
<tr>
<td>Partner with substance use (n=348)</td>
<td>101 (29%)</td>
</tr>
<tr>
<td>Rural zip code</td>
<td>63 (18%)</td>
</tr>
<tr>
<td>Medicaid</td>
<td>264 (76%)</td>
</tr>
</tbody>
</table>

*values are n (%) or mean (SD).*
## Medication type

<table>
<thead>
<tr>
<th>Medication Type</th>
<th>All (n=346)</th>
<th>OUD (no AUD) (n=180)</th>
<th>AUD (no OUD) (n=127)</th>
<th>OUD+AUD (n=39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methadone</td>
<td>80 (23.1%)</td>
<td>71 (39.4%)</td>
<td>0</td>
<td>9 (23.1%)</td>
</tr>
<tr>
<td>Buprenorphine-naloxone</td>
<td>62 (17.9%)</td>
<td>49 (27.2%)</td>
<td>0</td>
<td>13 (33.3%)</td>
</tr>
<tr>
<td>Naltrexone oral</td>
<td>23 (6.6%)</td>
<td>1 (0.6%)</td>
<td>20 (15.7%)</td>
<td>2 (5.1%)</td>
</tr>
<tr>
<td>Naltrexone IM</td>
<td>23 (6.6%)</td>
<td>4 (2.2%)</td>
<td>15 (11.8%)</td>
<td>4 (10.3%)</td>
</tr>
<tr>
<td>Acamprosate</td>
<td>39 (11.3%)</td>
<td>0</td>
<td>36 (28.3%)</td>
<td>3 (7.7%)</td>
</tr>
<tr>
<td>Gabapentin</td>
<td>21 (6.1%)</td>
<td>0</td>
<td>19 (15.0%)</td>
<td>2 (5.1%)</td>
</tr>
<tr>
<td><strong>Total receiving medication</strong></td>
<td><strong>248 (71.7%)</strong></td>
<td><strong>125 (69.4%)</strong></td>
<td><strong>90 (70.9%)</strong></td>
<td><strong>33 (84.6%)</strong></td>
</tr>
</tbody>
</table>

IM = intramuscular
### Predictors of MOUD, MAUD initiation

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Adjusted Odds Ratios (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>1.02 (0.997, 1.04)</td>
</tr>
<tr>
<td>Male gender</td>
<td>1.50 (0.87, 2.58)</td>
</tr>
<tr>
<td>Current homelessness</td>
<td>2.52 (1.47, 4.30)*</td>
</tr>
<tr>
<td>Partner with substance use</td>
<td>2.06 (1.13, 3.75)*</td>
</tr>
<tr>
<td>Ever received methadone</td>
<td>2.24 (1.28, 3.94)*</td>
</tr>
<tr>
<td>Concurrent methamphetamine use</td>
<td>0.32 (0.18, 0.56)*</td>
</tr>
</tbody>
</table>

MOUD = medication opioid use disorder; MAUD = medication for alcohol use disorder
Summary

• 72% of participants initiated MOUD and/or MAUD with plan to continue after discharge

• Homelessness, having a partner with substance use, and past methadone maintenance were associated with higher odds of MOUD/MAUD initiation during hospitalization.

• Co-occurring methamphetamine use was associated with a lower odds of MOUD/MAUD initiation.
Homelessness and partner substance use

- Positive association of homelessness and partner substance use was surprising
  - Studies in ambulatory settings found these factors are associated with lower treatment initiation

- Speculate that there may be an important interplay between motivation to initiate treatment and barriers to care
  - People with fewer barriers may initiate treatment before admission
  - Hospitalization may be an opportunity to engage hard-to-reach populations

Prangnell 2016, Damian 2017, Lo 2018, Watkins 2018
Riehman 2000
Past methadone treatment

• Survey did not include past exposure to other forms of MOUD, MAUD
• Future studies should explore this

• Hospitalization may be an opportunity to engage people who need multiple attempts to initiate MOUD/MAUD
Methamphetamines

• Negative association is important given surging rates of methamphetamine use nationally and the association of polysubstance use with overdose deaths.

• Possible that:
  • Methamphetamine withdrawal, cravings or psychiatric symptoms may interfere with MOUD/MAUD initiation
  • Dismissal from community MOUD treatment for methamphetamine use may dissuade patients from initiating in hospital settings
  • Methamphetamine use may be a surrogate marker for social exclusion or other differences

Barocas 2019
Winkelman 2018
Limitations

• Single-site study and all patients received care from an addiction medicine consult service
• Not all IMPACT patients agreed to participate in the survey
• Low racial and ethnic diversity
• Survey did not assess past use of all MOUD/MAUD
• Medication initiation does not reflect long-term treatment engagement
Implications

• Hospitalization may be an opportunity to reach highly-vulnerable people, further underscoring the need to provide hospital-based addictions care as a health-system strategy

• Findings support potential value of teams that can address social factors
  • Connection to housing, strategies to engage partners in addictions care
  • Relapse prevention plans

• Methamphetamine’s negative association with MOUD/MAUD warrants further study
Acknowledgements

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Thank you

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Extra slides
Sensitivity analysis

• Sensitivity analysis to determine if IMPACT delivery differed by OUD or AUD. If it differed, we planned to stratify models by OUD or AUD