Emergency Department Use for Substance Use Disorders among Ex-Prisoners

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Background

• In 2009, seven million adults in the U.S. were under correctional supervision.

• More than half a million leave prisons each year and return to the community.

• Substance use disorders are common among recent ex-prisoners.
Background

• Poor access to substance abuse treatment after release from prison; barriers include
  • Lack of insurance/financial resources
  • Transportation problems
  • Other immediate demands on time, including the need to secure housing and employment
Background

• Period just after release is an especially dangerous time; many return to or continue substance use

• Increased risk of mortality due to:
  • Drug overdose
  • Liver disease
  • Substance use-related car accidents
Background

• Health service use by ex-prisoners with substance use histories was 3 times higher than that of general population

• Little is known about emergency department (ED) use for substance use problems by ex-prisoners
Purpose

• The aim of the study was to compare use of emergency department services for substance use disorders among recent ex-prisoners and the general population in the state of Rhode Island between 2007 and 2009
Questions

• What proportion of ED visits were due to substance use? Is the proportion different for recent ex-prisoners?

• Controlling for patient and community factors, is ex-prisoner status associated with greater likelihood of an ED visit due to substance use?
Population

• Includes population of all 333,369 ED visits in Lifespan System from 2007-2009

• Lifespan System accounts for about 50% of ED visits in Rhode Island

• Data on ED visits was obtained from the RI Department of Health; no data on individuals
Variables

• The outcome variable in the study measured whether an ED visit was due to a substance use disorder

• This variable was created using the New York University ED Algorithm, which uses ICD-9 codes to classify ED visits
Variables

• The independent variable measured whether an ED visit was made by a recent ex-prisoner (year subsequent to release)

• Records from the RI Department of Corrections linked with Lifespan records and merged with dataset
Variables

• Patient-level control variables included age, gender, race/ethnicity, and facility

• Year dummies controlled for changes in ED visitation patterns over time

• ZIP code-level control variables included population size and unemployment rate
Analysis

• Chi-square tests and t-tests were used for descriptive comparisons

• Random effects logistic regression used to examine relation of ex-prisoner status to ED visits for SUDs

• Random effects account for unobserved heterogeneity at ZIP code level
# Results

## Descriptives

<table>
<thead>
<tr>
<th>Variable</th>
<th>Prisoner (n = 5,147)</th>
<th>Population (n = 328,222)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in years)</td>
<td>38.68</td>
<td>38.71</td>
</tr>
<tr>
<td>Female**</td>
<td>15%</td>
<td>52%</td>
</tr>
<tr>
<td>Race**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>26%</td>
<td>16%</td>
</tr>
<tr>
<td>Latino</td>
<td>9%</td>
<td>16%</td>
</tr>
<tr>
<td>White</td>
<td>64%</td>
<td>66%</td>
</tr>
<tr>
<td>Other</td>
<td>1%</td>
<td>3%</td>
</tr>
<tr>
<td>Substance use visits**</td>
<td>16%</td>
<td>4%</td>
</tr>
<tr>
<td>Hospital***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital A</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td>Hospital B</td>
<td>75%</td>
<td>60%</td>
</tr>
<tr>
<td>Hospital C</td>
<td>15%</td>
<td>25%</td>
</tr>
</tbody>
</table>

*p < 0.01; **p < 0.001
Results

Random effects logistic regression model

<table>
<thead>
<tr>
<th>Variable</th>
<th>AOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex-prisoner</td>
<td>1.93</td>
</tr>
<tr>
<td>Age</td>
<td>1.03</td>
</tr>
<tr>
<td>Female</td>
<td>0.31</td>
</tr>
<tr>
<td>Black</td>
<td>0.55</td>
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<tr>
<td>Latino</td>
<td>0.45</td>
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<tr>
<td>Other</td>
<td>0.42</td>
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<tr>
<td>Hospital B</td>
<td>1.86</td>
</tr>
<tr>
<td>Hospital C</td>
<td>0.40</td>
</tr>
<tr>
<td>Employment rate</td>
<td>4.24</td>
</tr>
</tbody>
</table>

(with confidence intervals)
Results

Among ex-prisoners with at least one SUD-related ED visit:

% of Visits and Ex-Prisoners by Number of visits:

- **Visits**:
  - 1 visit: 30%
  - 2 visits: 10%
  - 3 visits: 5%
  - 4 visits: 5%
  - 5 visits: 5%
  - 6 visits: 5%
  - 7 visits: 5%
  - 8 visits: 5%
  - 9 visits: 5%
  - 10 visits: 5%
  - <10 visits: 5%

- **Ex-Prisoners**:
  - 1 visit: 30%
  - 2 visits: 10%
  - 3 visits: 5%
  - 4 visits: 5%
  - 5 visits: 5%
  - 6 visits: 5%
  - 7 visits: 5%
  - 8 visits: 5%
  - 9 visits: 5%
  - 10 visits: 5%
  - <10 visits: 5%
Conclusions

- ED visits by ex-prisoners were four times more likely to be due to substance use.
- In multivariate models, visits by ex-prisoners had almost double the odds of being due to substance use.
- Plausible mechanisms include high rates of SUDs, inadequate care coordination, and financial barriers to treatment.
Limitations

• Data on ED visits limited to Lifespan Hospitals in Rhode Island

• No patient-level unique identifiers

• Residence data collected at admission to prison facility
Implications

• Findings suggest that recent ex-prisoners are more likely to have an ED visit related to substance use than general population

• High ED use seen in this study may be the result of high rates of untreated substance use disorders

• A small proportion of ex-prisoners with extremely high ED use for substance use
Implications

• Interventions to improve treatment access may reduce ED use by ex-prisoners:
  • Improving care coordination among prisons and treatment programs
  • Removing financial barriers to treatment
  • Using ED visits as an opportunity to link recent ex-prisoners to treatment
Next Steps

• Take a closer look at high utilizers of the emergency department for SUDs

• Examination of patterns in timing to first medical visit and types of visits

• Focus on HIV+ ex-prisoners
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