The diversion of non-scheduled psychoactive prescription drugs in the United States

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Background

Diversion - the unlawful channeling of regulated pharmaceutical drugs from legal sources to illicit markets:

- doctor shopping
- pharmacy theft
- forged prescriptions
- “pill mills”

Controlled substances are the most frequently diverted medications.
Objectives

• The reduction in the diversion of Rx opioids in the US since 2010 was accompanied by an increase in heroin and illicit fentanyl use.

• Gabapentin, a non-controlled GABA analogue used to treat neuropathic pain, is increasingly abused by opioid-dependent people (Buttram et al. 2016)

• We searched a national database for patterns of diversion of other non-scheduled psychoactive medications.
National Diversion Survey

To identify the diversion rates for selected drugs among a national sample of 250 law enforcement jurisdictions.

Rates are calculated per 100,000 population.

Mean population covered by the program 2002-2017 = 147 million.
Drug Diversion Program 2017 Geographic Coverage
Drug Diversion Program Methods

- Quarterly survey conducted since 2002
- Captures the total new cases officially logged during the previous quarter
- Queries the number of cases that included each target drug
- Space is provided to include data on other diverted drugs not listed
Top non-scheduled drugs 2002-2017  
(excludes gabapentin, previously reported)

<table>
<thead>
<tr>
<th>Drug</th>
<th># Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gabapentin (antineuralgic)</td>
<td>983</td>
</tr>
<tr>
<td>2. Cyclobenzaprine (muscle relaxant)</td>
<td>791</td>
</tr>
<tr>
<td>3. Quetiapine (antipsychotic)</td>
<td>532</td>
</tr>
<tr>
<td>4. Trazodone (antidepressant)</td>
<td>498</td>
</tr>
<tr>
<td>5. Sertraline (antidepressant)</td>
<td>194</td>
</tr>
<tr>
<td>6. Olanzapine (antipsychotic)</td>
<td>192</td>
</tr>
<tr>
<td>7. Methocarbamol (muscle relaxant)</td>
<td>163</td>
</tr>
<tr>
<td>8. Fluoxetine (antidepressant)</td>
<td>157</td>
</tr>
<tr>
<td>9. Buspirone (anxiolytic)</td>
<td>155</td>
</tr>
<tr>
<td>10. Clonidine (anxiolytic)</td>
<td>142</td>
</tr>
<tr>
<td>11. Hydroxyzine (antihistamine/ sedative)</td>
<td>142</td>
</tr>
<tr>
<td>12. Amitriptyline (antidepressant)</td>
<td>136</td>
</tr>
</tbody>
</table>
Results

• **Cyclobenzaprine** is prescribed off label for the treatment of pain; has sedative effects; is tracked by the DEA; street prices are reported.

• **Quetiapine** is prescribed off label for the treatment of anxiety and insomnia; has sedative effects; ER admissions for abuse reported; street prices are reported.

• **Trazodone** is prescribed off label for the treatment of insomnia and opioid withdrawal symptoms; sedative effects; prescriptions doubled between 2001 and 2014; street prices not apparent.
Diversion rates per 100,000 pop. and trend lines

- All Opioids
- Cyclobenzaprine
- Quetiapine
- Trazodone
Results

- Diversion rates for cyclobenzaprine, quetiapine and trazodone increased five to tenfold over the period.
- All trend lines, $p<.0001$.
- Regional clustering of cases was not observed.
- Internet searches and blogs indicate that all three medications are used for self-treatment of opioid withdrawal symptoms.
Discussion

Study strengths:

• 16 year period; consistent data collection procedures
• Extensive geographic and population coverage

Limitations:

• Not all geographic areas are covered
• Diversion of unscheduled medications drugs is likely underreported because they are not targets for law enforcement and are not listed on the survey
Discussion

- Increasing rates of diversion of trazodone, cyclobenzaprine and quetiapine are likely due to:
  - the ongoing opioid epidemic
  - tighter controls over scheduled medications
  - high availability and low street prices for non-scheduled drugs
Discussion

• There are potentially dangerous interactions with alcohol and other Rx and illicit drugs

• Prescribers need to be aware of diversion and misuse

• More research needed to identify specific populations and contexts for misuse
Thank you!

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