Buprenorphine Data from The RADARS® System

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Buprenorphine in the Treatment of Opioid Addiction: Reassessment 2010
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Statement of Disclosure

• The Researched Abuse, Diversion and Addiction Related Surveillance (RADARS®) System was initiated in 2002 and is owned and operated independently by Denver Health and Hospital Authority, a not-for-profit safety net hospital.

• The RADARS System is supported by pharmaceutical company subscribers.
Research Questions

1. What are recent time trends for buprenorphine misuse, abuse and diversion?
2. What are the consequences of concurrent buprenorphine and benzodiazepine misused and abuse?
3. What is the nature of accidental pediatric buprenorphine exposures?
About the RADARS® System
Six Views on Prescription Drug Abuse

- **Law Enforcement**
  - Drug Diversion
  - Criminal justice perspective

- **Survey of Key Informant Patients**
  - Dependent/addicted patients
  - Health care provider perspective

- **Poison Center**
  - Acute incident – calling for care advice
  - All ages and geographic regions

- **Opioid Treatment Program**
  - Dependent/addicted patients
  - Patient perspective

- **Impaired Health Care Worker**
  - Subset of all signal detection systems
  - Early adopter group?

- **College Survey**
  - Experimentation
  - Early abuse perspective
Drug Dependence Pathway

Opportunity → Use → Abuse → Dependence → Remission

Drug Diversion
URDD
College Survey

Poison Center
Impaired Health Care Worker
Key Informant
Opioid Treatment Program

Time Trends in Buprenorphine Misuse, Abuse and Diversion

Data from The RADARS® System
Poison Centers, Outpatient Treatment Programs, and Drug Diversion, 2002-2009
Buprenorphine Indicators
RADARS PC Calls and DAWN ED Mentions

PC = poison centers; ED = emergency department; pop. = population
Rates per 100,000/quarter

- **Patient Limit**
- **Baltimore Sun, 40mg methadone**
- **Generic Subutex**

**Graph Details:**
- **Y-axis:** Quarterly rate per 100,000 population
- **X-axis:** Years from 2002 to 2010
- **Legend:**
  - Red: Outpatient Treatment Programs
  - Green: Poison Centers
  - Blue: Drug Diversion
Rates per 100,000/quarter
Rates per 1000 URDD/quarter

Unique recipient of dispensed drug (URDD)
Population vs. URDD Rates
RADARS® System Poison Centers

ER = extended-release
Buprenorphine and Benzodiazepines

Data from The RADARS® System Poison Centers, 2009

Intentional Exposure Calls
PC IE calls for Buprenorphine and Buprenorphine + Benzodiazepines
Percent of calls by age group, 2009, N=1254

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Buprenorphine</th>
<th>Buprenorphine with benzodiazepines</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>6-12</td>
<td>0.7</td>
<td>0</td>
</tr>
<tr>
<td>13-19</td>
<td>12.4</td>
<td>9.1</td>
</tr>
<tr>
<td>20-29</td>
<td>32.1</td>
<td>44.4</td>
</tr>
<tr>
<td>30-39</td>
<td>19.8</td>
<td>21.8</td>
</tr>
<tr>
<td>40-49</td>
<td>11.6</td>
<td>13.1</td>
</tr>
<tr>
<td>50-59</td>
<td>8.4</td>
<td>6.3</td>
</tr>
<tr>
<td>60-69</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>70-79</td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td>80-89</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>Unknown child</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>Unknown adult</td>
<td>11.4</td>
<td>3.6</td>
</tr>
</tbody>
</table>
## Associated Medical Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Buprenorphine</th>
<th>Buprenorphine and Benzodiazepines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate effect,</td>
<td>24.7% N=248</td>
<td>39.3% N=99</td>
</tr>
<tr>
<td>major effect, deaths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deaths</td>
<td>0.8% N=2</td>
<td>3.0% N=3</td>
</tr>
</tbody>
</table>
RADARS® System Poison Center Program, Buprenorphine Intentional Exposure Calls with Benzodiazepines, 2009, N=252
Pediatric Exposures to Buprenorphine

Data from The RADARS® System Poison Centers
All exposure calls, <6 years old
PC Pediatric Exposures
Rates per 1000 URDD per Quarter, N=2281
What are the associated medical outcomes of buprenorphine & methadone pediatric exposures to poison center calls?

RADARS® System PC, 2009, < 6 years old
intentional/unintentional/other calls

<table>
<thead>
<tr>
<th>Condition</th>
<th>Buprenorphine N=1105</th>
<th>Methadone N=316</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor, Self Resolving Conditions (no effect, not followed non-toxic, not-followed minimal clinical effect)</td>
<td>64.3%</td>
<td>56.3%</td>
</tr>
<tr>
<td>Moderate Effects</td>
<td>17.9%</td>
<td>14.2%</td>
</tr>
<tr>
<td>Major Effects</td>
<td>1.4%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Death</td>
<td>0</td>
<td>0.6%</td>
</tr>
<tr>
<td>Unable to Follow, Judged Potentially Toxic</td>
<td>12.9%</td>
<td>19.0%</td>
</tr>
<tr>
<td>Unknown and other</td>
<td>3.4%</td>
<td>4.1%</td>
</tr>
</tbody>
</table>
Conclusions (1)

- Multiple cycles of buprenorphine misuse, abuse and diversion have occurred over the last 8 years, most recently in late 2008/early 2009
- Peaks in misuse, abuse and diversion of buprenorphine are not directly related temporally with large social events or regulatory changes
- Abuse of buprenorphine is detected earliest among enrollees in drug treatment centers, followed by callers to poison centers and then law enforcement
  - No immediate increases from generic Subutex
Conclusions (2)

• Co-ingestion of buprenorphine and benzodiazepines is occurring most among 20-29 years-olds, and is associated with more severe medical outcomes than buprenorphine alone or with other substances.

• Pediatric exposures for buprenorphine have increased somewhat over time, but are not associated with a major burden of serious medical outcomes.
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See Also