Interventions in Prescription Opioid Abuse – Do (or can) Prescription Monitoring Programs Make a Difference?

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Professor, University of Colorado School of Medicine
Competing Interests

- RADARS System is owned by Denver Health and Hospital Authority, the public hospital for the City and County of Denver. The program is supported by subscriptions by pharmaceutical manufacturers of prescription opioid and stimulants.
What We Heard Today

- National implementation of prescription monitoring programs in Australia
  - S. Nielsen, University of New South Wales, Sydney,
- Using Florida’s prescription drug monitoring program (PDMP) to monitor pharmacoepidemiologic outcomes before and after the US Centers for Disease Control and Prevention (CDC’s) opioid prescribing guidelines.
  - P. Delcher, University of Florida, Gainesville, Fl
- Evaluating the effectiveness of prescription monitoring programs.
  - B. Sproule, Centre for Addiction and Mental Health and University of Toronto, Toronto, Ontario, Canada
Progression of Rx Drug Abuse

Filling the Balloon

Susceptible Person

Person in Pain

Recreational Abuser

Abuse of Other Drugs

Outcomes

Intact → Chewed → Crushed

Addiction

Overdose

Death
The Theory Behind PDMPs

- PDMP UDT
- Training (e.g. REMS)
- Screening
- Person with Pain
  - Improper Use
  - Proper Use

Prescriber

Other Modalities
Progression of Rx Drug Abuse

Emptying the Balloon

Person in Pain

Guidelines

Susceptible Person

Recreational Abuser

Abuse of Other Drugs

Outcomes

Addiction

Overdose

Death

Treatment

Intact ➔ Chewed ➔ Crushed
What Do the Data Show?

- No adjustments
- Quality
- Start
- Use

Figure 1: Mean drug overdose and opioid overdose mortality rates for PDMP and non-PDMP states by year, 1999–2005. Error bars indicate ±1 standard error of the mean.

Slower Increase in Opioid Abuse in States with Active PMP

Table 2  Negative binomial model results—relative risk* over time (in quarters) of prescription opioid abuse and misuse in nonprescription monitoring program (non-PMP) and PMP states

<table>
<thead>
<tr>
<th>RR over Time</th>
<th>Poison Center</th>
<th>Opioid Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without PMP</td>
<td>1.019 (1.008, 1.030)</td>
<td>1.049 (1.036, 1.063)</td>
</tr>
<tr>
<td>With PMP</td>
<td>1.002 (0.992, 1.012)</td>
<td>1.026 (1.009, 1.044)</td>
</tr>
</tbody>
</table>

Status of State Prescription Drug Monitoring Programs (PDMPs)

- States with operational PDMPs
- States with enacted PDMP legislation, but program not yet operational
- States with legislation pending

1 The operation of Nebraska’s Prescription Monitoring Program is currently being facilitated through the state’s Health Information Initiative. Participation by patients, physicians, and other health care providers is voluntary.

© 2015 The National Alliance for Model State Drug Laws (NAMSDL). Headquarters Office: 420 Park Street, Charlottesville, VA 22902. This information was compiled using legal databases, state agency websites and direct communications with state PDMP representatives.
The RADARS System Poison Center Program
Prescription Opioid Intentional Abuse Rates per 100,000 Population
From October 1, 2008 to September 30, 2015

- Missouri-Opioids with buprenorphine and methadone
- Missouri-Opioids without buprenorphine and methadone
- US excluding Missouri-Opioids with buprenorphine and methadone
- US excluding Missouri-Opioids without buprenorphine and methadone
Use of PDMPs Increased 121% from 2014 to 2016

Fact sheet: Physicians’ and other health care professionals’ use of state prescription drug monitoring programs increases 121 percent from 2014 to 2016; registration nearly triples.

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>923</td>
<td>1,122</td>
<td>1,847</td>
<td>45,145</td>
<td>69,282</td>
<td>147,378</td>
</tr>
<tr>
<td>Arizona</td>
<td>5,843</td>
<td>27,041</td>
<td>8,474</td>
<td>555,240</td>
<td>734,625</td>
<td>2,336,448</td>
</tr>
<tr>
<td>Arkansas</td>
<td>5,159</td>
<td>6,117</td>
<td>20,741</td>
<td>3,553,551</td>
<td>6,174,394</td>
<td>9,581,280</td>
</tr>
<tr>
<td>California</td>
<td>9,136</td>
<td>17,637</td>
<td>166,819</td>
<td>27,680</td>
<td>250,662</td>
<td>484,736</td>
</tr>
<tr>
<td>Connecticut</td>
<td></td>
<td></td>
<td></td>
<td>250,662</td>
<td>484,736</td>
<td>974,815</td>
</tr>
<tr>
<td>Colorado</td>
<td></td>
<td></td>
<td></td>
<td>39,554</td>
<td>682,600</td>
<td>898,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>471,896</td>
<td>628,268</td>
<td>1,322,966</td>
<td>61,462,376</td>
<td>86,096,259</td>
<td>136,095,271</td>
</tr>
</tbody>
</table>

Notes: The AMA sent inquiries to every state PDMP administrator in 2016 and 2017 to obtain this data. In some cases, the PDMP administrator did not respond to the inquiry, or due to other issues, was not able to provide the information. The data will be updated as new information becomes available. (Last updated May 2017)
# NAMSDL Strong PDMPs

<table>
<thead>
<tr>
<th></th>
<th>Strong PMP</th>
<th>Standard PMP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proactive Disclosure</strong></td>
<td>Proactive disclosure to 3 or 4 of the following sources (prescribers, dispensers, licensing boards, and/or law enforcement)</td>
<td>Proactive disclosure to 0-2 sources</td>
</tr>
<tr>
<td><strong>Registration</strong></td>
<td>Prescribers and/or dispensers are required to register with the PMP.</td>
<td>Not required to register with PMP</td>
</tr>
<tr>
<td><strong>Access</strong></td>
<td>Prescribers and/or dispensers are required to access the PMP in certain circumstances.</td>
<td>Not required to access the PMP</td>
</tr>
<tr>
<td><strong>Collection Interval</strong></td>
<td>Data is reported and available in less than 72 hours.</td>
<td>More than 72 hours</td>
</tr>
<tr>
<td><strong>Interstate Sharing</strong></td>
<td>Data is shared with other state PMPs or shared with other state PMPs and authorized users in other states.</td>
<td>Data is not shared</td>
</tr>
</tbody>
</table>
PMPs are Improving Quickly

States with Standard and Strong PMPs

<table>
<thead>
<tr>
<th>Year</th>
<th>Strong PMPs</th>
<th>Standard PMPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>2016</td>
<td>72%</td>
<td>28%</td>
</tr>
<tr>
<td>Drug</td>
<td>Strong PMP Median USD/mg</td>
<td>Standard PMP Median USD/mg</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>0.33</td>
<td>0.33</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>2.50*</td>
<td>1.88</td>
</tr>
<tr>
<td>Carisoprodol</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td>0.80*</td>
<td>0.67</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>2.50</td>
<td>2.50</td>
</tr>
<tr>
<td>Lisdexamphetamine</td>
<td>0.17</td>
<td>0.17</td>
</tr>
<tr>
<td>Methadone</td>
<td>1.00*</td>
<td>0.60</td>
</tr>
<tr>
<td>Methylphenidate</td>
<td>0.28</td>
<td>0.28</td>
</tr>
<tr>
<td>Morphine</td>
<td>0.37*</td>
<td>0.33</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>1.00*</td>
<td>0.83</td>
</tr>
<tr>
<td>Oxymorphone</td>
<td>1.50*</td>
<td>1.00</td>
</tr>
<tr>
<td>Tramadol</td>
<td>0.05</td>
<td>0.05</td>
</tr>
</tbody>
</table>
Impact of prescription drug monitoring programs on opioid utilization among Medicare beneficiaries

- **DESIGN:** Opioid Rx, PDMP vs. non-PDMP states, 2007-12
- **SETTING:** FL, LA, NE, NJ, VT, GA, WI, MD, NH, AR
- **PARTICIPANTS:** 310,105 disabled and older adult Medicare enrollees
- **MEASUREMENTS:** Monthly total opioid volume, mean daily MME dose per prescription, and number of opioid Rx

**FINDINGS:**
- PDMP associated with reduced opioid use, measured by volume, among disabled and older adult Medicare beneficiaries compared with states without PDMPs

Prescription Drug Monitoring Programs Produce Limited Impact on Painkiller Prescribing in Medicare Part D.

- DATA SOURCE: 2010-13 physician-level Medicare Part D
- STUDY DESIGN: Compared states with and without PDMPs for opioid and nonopioid analgesics
- PRINCIPAL FINDINGS:
  - PDMP - 5.2% decrease in days supply prescribed per physician for oxycodone.
  - Smaller reductions for hydrocodone and opioids overall (2.8% and 2%, respectively)
  - Small increase in prescribing for Schedule IV opioids.
  - PDMP not associated with changes for nonopioid analgesics
  - PDMP effects negated in states PDMP use not required

Yarbrough CR. Health Services Research, 2017
Confounding Main Challenge to Interpretation of PDMP Data

Rate adjusted for population

Oxycodone ER

PDMP

Other Opioids

Percent of Population Covered by PDMP


All Other Opioids (per 100,000 population) Oxycodone ER (per 10,000 population) PDMP Coverage
Yes, PMPs make a difference
  - The extent of that difference is unclear

Biggest Challenge is separating effects of other interventions from PMPs

PMPs have other values, which remain unstudied
  - Health care system use
  - Individual group use
  - Law enforcement