Pitfalls and Potholes: Data Issues to Consider When Analyzing State Opioid Policies

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Introductions

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  RAND Pittsburgh

• Rosalie Licciano Pacula PhD – Co-Director of OPTIC, University of Southern California, Schaeffer Center for Health Policy

• Rosanna Smart PhD - OPTIC Center Project Lead
  RAND Santa Monica

• Tisamarie Sherry MD, PhD – OPTIC Investigator
  RAND Washington DC
RAND-USC Schaeffer Opioid Policy Tools & Information Center of Research Excellence (OPTIC)

- NIDA funded P50 Center (P50-DA046351)
- OPTIC’s mission is to be a national resource
- Improve opioid policy by addressing some shortcomings of current research approaches
  - Improve access to and use of data for opioid policy analyses
  - Enhance analytic methods
- Actively disseminate these assets to the research community
- Effectively share research findings with federal and state decisionmakers and other stakeholders

Roadmap for today’s presentation

- What is an opioid policy?
- What are some of the differences in data sources for state-level opioid policy?
- Why these differences matter using three opioid policy exemplars
  - Morphine Equivalent Daily Doses (MEDD) policies
  - Prescription Drug Monitoring Programs (PDMPs)
  - Naloxone access laws (NALs)
- Issues of time when evaluating opioid policies
Issues & Lessons Related to Opioid Policy Data

Section 1 (90 minutes)

I. What is an opioid policy?
Most policy analysts think of opioid policy in terms of state or federal law

- As *written* (e.g., statutory or regulatory law)
- As *implemented/interpreted* by agencies
  - Agency rules and structures for implementation
  - State/federal/agency resources dedicated to it
- As *experienced*
  - Enforcement (compliance? penalties?)
  - Equal application of the law?
  - Population targeted and/or affected by the law

A legal definition of “policy” is broader than “laws on the books”
In health care, opioid policies are also enacted through rules, guidelines and practices of other actors

Actors
- Federal and State Legislatures
- Federal Agencies & National Assoc
- Insurers
- State and Local Health Departments
- State Medical Boards
- Professional Societies
- Health Care Delivery Organizations

Policies
- Laws
- Guidelines, Rules & Regulations
- Guidelines & Coverage Decisions
- Rules & Regulations
- Guidelines
- Guidelines, CME & Standards of Practice/Conduct
- Guidelines & Delivery System Innovations

OPTIC’s research encompasses multiple dimensions of opioid policy

- State law as it is written (e.g. statutory & regulatory)
- State agency interpretation / implementation (when it can be systematically measured across states)
- Policy as it is experienced (enforcement, compliance, coverage)
- Guidelines and rules being followed and/or implemented within health systems that can be ascertained by studying outcomes

For today’s webinar we will focus primarily on existing sources of state laws and regulations (i.e., those most frequently considered in policy research)
Questions?

II. Where are researchers getting state-level opioid policy data (i.e., “statutes and regulations”) and why does the source matter?
Common sources of state-level opioid policy data

- Legal research organizations
- Advocacy sources
- Independent researchers
- Procurers of “Information of interest”

For research purposes
- Some sources are more useful or reliable than others
- Essential to know what the curator of the data source means when defining “policy”

Examples of sources for state-level opioid policy data

<table>
<thead>
<tr>
<th>Source</th>
<th>Examples of policies included</th>
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</thead>
<tbody>
<tr>
<td>PDAPS/LawAtlas*</td>
<td>Naloxone access laws</td>
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<tr>
<td></td>
<td>Good Samaritan laws</td>
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<td>PDMPs</td>
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<tr>
<td>National Alliance for Model State Drug Laws (NAMSDL)</td>
<td>Naloxone access laws</td>
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<td>Good Samaritan laws</td>
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<td>PDMPs</td>
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<td>National Conference of State Legislatures (NCSL)</td>
<td>Naloxone access laws</td>
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<td>PDMPs</td>
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<tr>
<td>Network for Public Health Law (NPHL)</td>
<td>Naloxone access laws</td>
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<td>Good Samaritan laws</td>
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<tr>
<td>CDC Public Health Law Program</td>
<td>Good Samaritan laws</td>
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<td>Patient exams and ID laws</td>
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<td>Athena Health</td>
<td>Legalized medical marijuana</td>
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<td></td>
<td>Frequency of updates to PDMPs</td>
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</table>
How might these sources vary in terms of information reported?

- Cross-sectional v. Longitudinal
  - A snapshot at a specific point in time or available over some period
- Ease of access for analytic purposes
  - Specificity of dates
  - Machine-readable formats
- Elements/detail provided
  - Whether coded systematically; provides links to statutes; etc.
- Definition of the policy
  - Existence of a law? Funded program?
- Methods of data collection
  - How often updated; do updates overwrite older data; data independently validated; changes documented

Key takeaways about opioid policy data

- Most of these secondary sources focus on laws/statutes – thus most of the research focuses on laws/statutes
- Opioid policy is also made in places not reflected in state statutes:
  - Health systems, insurers, medical associations
- Population affected by the “policy” will depend on multiple factors (e.g. type of insurance, type of employer due to exemptions for small firms, etc.)
### Examples of policies and policy components

<table>
<thead>
<tr>
<th>Policy</th>
<th>Broad Description</th>
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<tbody>
<tr>
<td>Morphine Equivalent Daily Dose (MEDD) Policies</td>
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<td>Naloxone Access Laws (NALs)</td>
<td>Laws to increase naloxone prescribing and distribution (through pharmacies)</td>
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</tbody>
</table>

### Consider MEDD policies

<table>
<thead>
<tr>
<th>Policy</th>
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<th>Examples of Key Components</th>
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</thead>
<tbody>
<tr>
<td>Morphine Equivalent Daily Dose (MEDD) Policies</td>
<td>Policies intended to limit high-dose opioid analgesic prescribing</td>
<td>• Type of MEDD policy</td>
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<tr>
<td></td>
<td></td>
<td>• “High Dose” definition</td>
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<td></td>
<td></td>
<td>• Populations covered</td>
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</tbody>
</table>
**Types of MEDD policies are defined differently**

MEDD policies include:
- **Laws or regulations** restricting high-dose opioid prescribing
- **Guidelines** discouraging prescribing above a certain dose threshold
- **Alert systems** triggered by a dose threshold
- **Claim denial** above a certain dose threshold


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**Type of MEDD policy might affect...**

- **Scope/reach**
- **Enforceability**

There are important differences among MEDD “policies” to consider when comparing or grouping them for analyses.
Why do differences in high-dose thresholds matter?

- Thresholds determine the populations affected
  - Threshold of 300 MEDD affects a much smaller – but more medically complex – population than a threshold of 30 MEDD

- Thresholds also determine the providers affected
  - Threshold of 300 MEDD affects a narrower set of providers, potentially distinct specialties
  - Do high thresholds target “bad doctors” – or doctors who care for the most complex chronic pain patients?
Cautions when using high-dose MEDD policies

• Be careful when grouping MEDD policies that have very different high-dose thresholds

• Even when comparing the effectiveness of policies with higher versus lower thresholds, remember the policies may affect fundamentally different patients, providers and clinical settings

Most states with MEDD policies have exempted certain patient populations and clinical scenarios

• Hospice/palliative care (most common – 12 states)
• Acute pain (10 states)
• Cancer pain (8 states)
• Sickle cell anemia
• ED or inpatient care
• Intra-operative care
• Long-term care/nursing home patients
Most states with MEDD policies specify circumstances in which high dose threshold can be exceeded

- Specialist consultation (most common – 14 states)
- Pain contract/patient education (7 states)
- Clinical judgment (6 states)
- Improved pain/functioning (5 states)
- Short course of opioids (5 states)
- Evidence of tapering
- PDMP reviewed
- Drug testing
- Two states (AK, KY) have no exemptions

Key takeaways about MEDD policies

- MEDD policies may differ across states along numerous dimensions:
  - Type of policy (e.g. law, regulation, insurer policies, guidelines)
  - Patient populations subject to the policy
  - Definition of high-dose thresholds
  - Ease with which high-dose thresholds can be exceeded
  - Ease of monitoring and enforcement

- Implications:
  - When analyzing impacts of MEDD policies as a group, critical to appreciate that the policies are heterogeneous
  - When comparing the impacts of different MEDD policies (e.g., high dose threshold), be aware that they can differ along many other dimensions
## Questions?

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### Let’s consider PDMPs

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<td>• Populations covered</td>
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<td>Prescription Drug Monitoring Programs (PDMPs)</td>
<td>Systems to track and monitor prescribing and/or dispensation (of certain drugs)</td>
<td>• “Operational” PDMP</td>
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<tr>
<td></td>
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<td>• “Must Access” PDMP</td>
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<td></td>
<td>• Populations covered</td>
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</tbody>
</table>
Literature has defined PDMPs in multiple ways

- Any PDMP
- Electronic PDMP
- “Modern” PDMP
- Operational PDMP
- Must-access PDMP
- Physician must-access PDMP

Researchers have used variants of these “definitions” to describe an “operational” PDMP
**Electronic systems**

- Any PDMP
  - Electronic PDMP
  - “Modern” PDMP
  - Operational PDMP
  - Must-access PDMP
  - Physician must-access PDMP

“Electronic systems” are not paper-based. They allow dispensers and/or prescribers to electronically transmit and receive prescription information to and from the state authority maintaining the PDMP.

**Modern PDMPs**

- Any PDMP
  - Electronic PDMP
  - “Modern” PDMP
  - Operational PDMP
  - Must-access PDMP
  - Physician must-access PDMP

“Modern PDMP” may refer to “a more comprehensive program” that is electronic, with frequent updating, and includes at least four of the 5 CSA drug schedules.

Modern PDMPs

• Any PDMP
  • Electronic PDMP
  • “Modern” PDMP
  • Operational PDMP
• Must-access PDMP
• Physician must-access PDMP

“Modern PDMPs are fully electronic; more accessible to physicians, pharmacists, and other pertinent parties; and often include requirements for mandatory use.”


Operational PDMPs

• Any PDMP
  • Electronic PDMP
  • “Modern” PDMP
  • Operational PDMP
• Must-access PDMP
• Physician must-access PDMP

By “Operational PDMP”, researchers usually mean a comprehensive system that (1) is electronic, (2) end user can access remotely; (3) is updated at least weekly, and recently (4) is fully funded.

Data sources often drive PDMP definition

- Data curators collect data with particular details and/or definitions
- In some data systems, they have a specifically defined version of a PDMP (indicated with an “X”)
- In other data systems, researchers can construct a version of PDMPs they want to consider (indicated with a “C”)

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<td>Electronic</td>
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<td>&quot;Modern&quot;</td>
<td>C</td>
<td>C</td>
<td>C</td>
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<tr>
<td>Operational</td>
<td>X**, C</td>
<td>X***, C</td>
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<td>X, C</td>
</tr>
</tbody>
</table>

PDMP laws in effect when using “Electronic” versus “Operational” definition as of January 2012

Types of PDMP laws as of January 2012
Must-access PDMPs

- Any PDMP
- Electronic PDMP
- "Modern" PDMP
- Operational PDMP
- Must-access PDMP
- Physician must-access PDMP

A “Must Access” PDMP typically requires some group of professionals to access the PDMP before dispensing and/or prescribing an Rx drug.


Physician must-access PDMPs

- Any PDMP
- Electronic PDMP
- "Modern" PDMP
- Operational PDMP
- Must-access PDMP
- Physician must-access PDMP

By “Physician Must Access”, researchers narrow laws to those that require physicians and/or prescribers to access before prescribing.

Smith et al (2019); Horowitz et al (2019)
To some extent, different definitions stem from different data sources

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</table>

<table>
<thead>
<tr>
<th>Must Access (distributors)</th>
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<table>
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<tr>
<th>Must Access (prescribers)</th>
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Comparing effective dates across data sources provides useful insights on important details

<table>
<thead>
<tr>
<th>Legislative Date</th>
<th>PDAPS</th>
<th>PDAPS Electronic (originally downloaded July 2016)</th>
<th>PDAPS (Re-checked 9/19/2019)</th>
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</thead>
<tbody>
<tr>
<td><strong>AL</strong></td>
<td>8/1/2004</td>
<td>5/13/2005</td>
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<tr>
<td><strong>AK</strong></td>
<td>9/7/2008</td>
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<td><strong>AZ</strong></td>
<td>9/19/2007</td>
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<td><strong>AR</strong></td>
<td>7/27/2011</td>
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<td><strong>CA</strong></td>
<td>&lt;1998</td>
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<tr>
<td><strong>CO</strong></td>
<td>6/3/2005</td>
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<td><strong>CT</strong></td>
<td>10/1/2006</td>
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<tr>
<td><strong>DE</strong></td>
<td>1/1/2011</td>
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</table>
Comparing effective dates across data sources provides useful insights on important details

### Legislative Dates

<table>
<thead>
<tr>
<th>State</th>
<th>PDAPS Electronic (originally downloaded July 2016)</th>
<th>PDAPS (Re-checked 9/19/2019)</th>
<th>Any PMP (Horowitz)</th>
<th>Electronic PMP (Horowitz)</th>
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<tr>
<td>AL</td>
<td>8/1/2004</td>
<td>5/13/2005</td>
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<td>AK</td>
<td>9/7/2008</td>
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<td>Nov-08</td>
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<td>AZ</td>
<td>9/19/2007</td>
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<td>Sep-07</td>
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<tr>
<td>CA</td>
<td>&lt;1998</td>
<td>1/1/1939</td>
<td>&lt;1990</td>
<td>Jan-05</td>
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<tr>
<td>CO</td>
<td>6/3/2005</td>
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<td>Jun-05</td>
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<tr>
<td>CT</td>
<td>10/1/2006</td>
<td>6/6/2006</td>
<td>Oct-06</td>
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<tr>
<td>DE</td>
<td>1/1/2011</td>
<td>7/15/2010</td>
<td>Nov-11</td>
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</table>

### Law Component Dates

<table>
<thead>
<tr>
<th>State</th>
<th>PDAPS Electronic (originally downloaded July 2016)</th>
<th>PDAPS (Re-checked 9/19/2019)</th>
<th>Any PMP (Horowitz)</th>
<th>Electronic PMP (Horowitz)</th>
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<td>AK</td>
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<td>Nov-08</td>
<td>9/7/2008</td>
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<td>9/19/2007</td>
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<td>CA</td>
<td>&lt;1998</td>
<td>1/1/1939</td>
<td>&lt;1990</td>
<td>1/1/2004</td>
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</table>
Comparing effective dates across data sources provides useful insights on important details

<table>
<thead>
<tr>
<th>Legislative Dates</th>
<th>Law Component Dates</th>
<th>Implementation</th>
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<tbody>
<tr>
<td>PDAPS Electronic (originally downloaded July 2016)</td>
<td>PDAPS (Re-checked 9/19/2019) Any PMP PMP (Horowitz) (Re-checked 9/19/2019)</td>
<td>Dispensers required to report Prescribers authorized access Electronic Data Collection Electronic Data Collection (Re-checked 9/19/2019) Docs have access (PDAPS) Docs have access (Horowitz) Docs have online access</td>
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<tr>
<td>AK 9/7/2008</td>
<td>Nov-08</td>
<td>9/7/2008</td>
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</table>

Populations affected by PDMPs

<table>
<thead>
<tr>
<th>Elements of PDMP</th>
<th>Affected population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheduled drugs included in PDMP</td>
<td>Schedule II only Schedule II-V Narrow Broad</td>
</tr>
<tr>
<td>Professionals that have access to PDMPs?</td>
<td>Dispensers Prescribers Narrower Broader</td>
</tr>
<tr>
<td>Which prescribers must register and check? (How many are registered?)</td>
<td>Physicians only Any prescriber Narrower Broader</td>
</tr>
<tr>
<td>For which patients must prescribers check?</td>
<td>New patients Chronic pain patients All patients Narrow Narrow Broad</td>
</tr>
<tr>
<td>Frequency of data updates</td>
<td>Monthly Weekly Every 3 days Daily Small Narrow Better Broad</td>
</tr>
</tbody>
</table>
Key takeaways about PDMP policies

• Elements of PDMP policies make them more or less likely to influence behavior of physicians and patients

• Good data systems capture lots of these elements but do so differentially

• Implications:
  • Researchers need to understand what definitions of policies are being used by data curators (and therefore, by them)
  • Those reviewing the literature must understand which attributes of PDMP policies are being evaluated from study to study in order to draw appropriate conclusions

Questions?

And 10 Minute Break
Let’s consider naloxone access laws

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<tr>
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• “High Dose” law  
• Populations covered |
| Prescription Drug Monitoring Programs (PDMPs)               | Systems to track and monitor prescribing and dispensation (of certain drugs)       | • “Operational” PDMP  
• “Must Access” PDMP  
• Populations covered |
| Naloxone Access Laws (NALs)                                 | Laws to increase naloxone prescribing and distribution (through pharmacies)        | • Liability protections  
• Non-patient-specific Rx models  
• Mandated naloxone prescribing |

NALs are relatively new but researchers are already examining multiple policy dimensions

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<tr>
<td>Any Naloxone Access Law</td>
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<td>Remove criminal liability for naloxone possession without Rx</td>
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<td>Prescriber immunity</td>
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<td>Third party prescribing</td>
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<td>Non-patient-specific Rx model/Standing order*</td>
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<td>“Direct dispensing” by pharmacists authorized*</td>
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<td>Lay dispensing permitted</td>
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[1] Rees et al., 2017  
[2] Rees et al., 2019  
[3] Blanchard et al., 2018  
[4] Gartner et al., 2018  
[5] Xu et al., 2018  
[6] Lambdin et al., 2018  
[7] Doleac & Mukherjee, 2018  
[8] McClean et al., 2018  
[9] Abouk et al., 2019  
[10] Atkins et al., 2019  
[12] Sohn et al., 2019
### Evaluations initially focused on liability protections

<table>
<thead>
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### More attention to laws broadening access

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Mechanisms to expand pharmacy distribution are classified in different ways

• Third party prescribing & “standing orders” are distinct aspects of legal statute
  • In practice, they are often implemented within the same legislation or in the same year
  • Thus, in empirical analysis, they are often grouped together

• Differences in what types of laws are counted as a “standing order” (non-patient-specific prescription models)

Sources of policy data for expanded NAL access

• What constitutes a “standing order” varies by data source
  • PDAPS: Based on statutory text (sometimes)
  • NPHL: Based on “functional equivalence”

<table>
<thead>
<tr>
<th>Source of Policy Data</th>
<th>NASPA</th>
<th>NCSL</th>
<th>NPHL</th>
<th>PDAPS</th>
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<td>Collaborative practice agreement</td>
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</table>
**Non-patient specific Rx distribution models for Naloxone**

As of 12/31/2018, all states had expanded pharmacy distribution models.

---

**Nature of naloxone mandates through 12/31/2018**
Key takeaways about naloxone policies

• How naloxone laws affect opioid-related harms is still being evaluated

• State methods for non-patient specific distribution are still developing and require keen attention from researchers

• Implications:
  1) It will take time to determine meaningful (and consistent) impacts of current laws on some outcomes
  2) Early findings of early laws may not be confirmed in subsequent studies of later laws, as the laws continue to evolve

Your research question will likely determine the policy definition to use

Each of these areas includes aspects of implementation related to population covered, enforcement, etc.
Questions?

Considering “Time”
Section 2 (50 minutes)
III. Defining relevant point in time for evaluating a policy

Every policy has a timeline

- Enactment date
- Effective date
- Date implementation starts/ends
- Date target group educated
Enacted and effective PDMP dates from Horowitz et al. (2018)

Jun-09 – Dec-10, FL

May-05 & May-05, OH

May-06 – Jun-08, VT

May-11 – Oct-11, MD

Jul-07 – Aug-11, WA

Jun-06 – Jul-06, LA

A closer look at time lags between when law was enacted versus when it became effective

Number of States

<table>
<thead>
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<th>Lag between enactment and effective dates</th>
<th>Lag between enactment and implementation dates</th>
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<tbody>
<tr>
<td>No Lag</td>
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<td>1-3 Months</td>
<td>6</td>
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<td>4-6 Months</td>
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<tr>
<td>7-9 Months</td>
<td>8</td>
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<tr>
<td>10-12 Months</td>
<td>13-24 Months</td>
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</table>

Horowitz et al. (2018), Tables 2 & 3
Issue becomes even more complicated with MEDD policies

- For some types of MEDD policies, implementation may closely follow enactment:
  - Example: claim denial policies in Medicaid

- As the number of implementation steps for a policy increases, the delay between enactment and when the policy reaches the target group grows

- Even once it reaches the target group, if the policy lacks clear enforcement mechanisms to compel full adoption, from what point do we consider it “fully implemented” for the purposes of policy analysis?
When was ME DD policy fully implemented?
Example of Washington State 2007 ME DD guidelines

- Guideline (discouraged doses > 120 ME DD, recommended specialist consultation)
- Implementation steps, March 2007-June 2008:
  - Presentations to provider groups
  - Web-based training for CME credit
  - Posting on state medical association website
  - Posting on the National Guideline Clearinghouse
- Some changes in prescribing behavior beginning in early 2008, but even in 2009 fewer than half of providers were aware of guideline.

When would you consider policy “fully implemented” for purposes of measuring impact?

<table>
<thead>
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<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>March 1, 2007</td>
<td>“Enactment” &amp; Implementation Start Date</td>
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<tr>
<td>2008 1st Quarter</td>
<td>Declines in High Dose Prescriptions Begin</td>
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<tr>
<td>June 2008</td>
<td>Implementation End Date</td>
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<tr>
<td>2009</td>
<td>45% of Providers Aware of Guideline</td>
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Estimated Policy Impact Depends on Measurement Dates

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent Opioid Users Receiving &gt; 120 mg ME DD in Washington State</th>
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<tbody>
<tr>
<td>2006</td>
<td>19%</td>
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<td>2007</td>
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<td>2008</td>
<td>18.4%</td>
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<td>2009</td>
<td>17.1%</td>
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<td>2010</td>
<td>16%</td>
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Sullivan et al. 2016
Questions?

IV. Transition in policy and policy elements over time
Since 2012, increasing number of policies with lower MEDD thresholds

Issues to consider when analyzing changes in MEDD high-dose thresholds over time

• Coincident MEDD policy changes:
  • Other MEDD policy elements have changed over time
  • More robust enforcement mechanisms
  • Additional patient group exclusions

• Coincident changes in other opioid-related policies:
  • PDMPs
  • Opioid prescription duration limits
  • CDC prescribing guidelines
  • Insurer and health system interventions

Because elements of PDMPs have changed over time, actual policies being evaluated over time also change

Due to adoption of different components, actual PDMP in effect differs across states at different times

Diff-n-diff models depend on what component is being considered
Laws don’t evolve the same way in every state

Not all “components” follow the same temporal sequence across states.

Even when things “usually” progress a given way:

1) It is never uniform (e.g. NY, WV)

2) Length of time between components can differ by a lot!

3) Simultaneous adoption occurs

PDMP Adoption of Specific Components for All States

Electronic
Operational
Dispensers Required to Report
Electronic Operational Dispensers Required to Report Prescriber Must Access

PDMP Adoption of Specific Components for All States

2013

PDMP Adoption of Specific Components for All States

2016
Lag time between policy component adoption may also be relevant.

NAL Adoption of Specific Components for All States

- Any NAL
- Non-patient-specific distribution or Pharmacist prescriptive authority
NAL Adoption of Specific Components for All States

2016

2018

Any NAL
Non-patient-specific distribution or Pharmacist prescriptive authority
Mandate (offering or prescription)
Questions?

10 Minute Break & Then Wrap-Up
(30 minutes)
While each policy area has its own timeline, each must also be considered in terms of how the other policies are changing.

Key takeaways: Where are the pitfalls and potholes?

1. Opioid policies are more than just laws and statutes
   - Unobserved health system policies could matter in your analysis
2. There are a growing number of reliable sources for legal statutes / regulations, but definitions and information differs between them
   - Need to think about your question and data
3. Within each opioid policy area, policies tend to evolve or “strengthen” over time
   - Important implications on methods that can be used
4. Because policies keep evolving, and multiple opioid policies are being adopted, pay attention to collinearity in the timing of your policy and related opioid policies
Practical considerations in light of these:

- Specify the date of the policy data downloaded, not just the source
- Be explicit about the definitions being used and confirm those are the definitions the data curator used as well
- If collecting your own data, *always, always, always* work with a lawyer
- When examining new opioid policy domains, control for the most effective form of other opioid policies
- Consider how “enforceable” a policy might be and whether this could vary based on policy features

Practical considerations (continued):

- Recognize the areas of policy that might be relevant for influencing your data that aren’t captured in the data you have
- Be aware of the timeline and completeness of policy implementation when you are designing a study
- When you are reading a study, look to see that the author clearly explained and considered these elements as well
For more information, go to:

- [https://www.rand.org/health-care/centers/optic/resources/datasets.html](https://www.rand.org/health-care/centers/optic/resources/datasets.html)
- [http://www.pdaps.org/](http://www.pdaps.org/)
- [http://www.lawatlas.org/](http://www.lawatlas.org/)
- [https://www.cdc.gov/phlp/](https://www.cdc.gov/phlp/)
- [https://namsdl.org/](https://namsdl.org/)
- [https://www.ncsl.org/](https://www.ncsl.org/)

References


References


Xu, J., Davis, C.S., Cruz, M., Lurie, P. 2018. State naloxone access laws are associated with an increase in the number of naloxone prescriptions dispensed in retail pharmacies. Drug Alcohol Depend. 189, 37-41.