Review

Barriers and facilitators to PDMP IS Success in the US: A systematic review

Heather D. Martin *, Shikha S. Modi, Sue S. Feldman

School of Health Professions, The University of Alabama at Birmingham, 1716 9th Ave S, Birmingham, AL, 35295, United States

ARTICLE INFO

Keywords:
Prescription drug monitoring program
PDMP
Opioids
Pain management

ABSTRACT

Introduction: Prescription Drug Monitoring Programs (PDMP) help prevent prescription drug misuse and promote appropriate pain management. Despite these benefits and PDMP mandates in most states, PDMPs face challenges that hinder their success. This paper uses the Delone and McLean Information Success (IS) Model to review the current literature for barriers and facilitators to PDMP quality, use, intention to use and user satisfaction in the United States (U.S.).

Material and Methods: Scopus, PubMed and Embase databases were searched due to their relevance to information technology, education and research.

Results: There were 142 and 183 barriers and facilitators, respectively, found in 44 peer reviewed articles. Barriers to PDMP quality, use and user satisfaction include lack of interstate data sharing, access difficulties, lack of time, inability to delegate access, lack of knowledge or awareness of the PDMP, and lack of EHR integration. Facilitators to PDMP quality, use and user satisfaction include interstate data connections, real-time data updates, EHR integration, and access delegation.

Discussion: Interstate data sharing, EHR integration and expanding access to delegates were common themes found. Some results were found to be contradictory such as mandating use.

Conclusion: PDMP users can use these findings to assess current barriers to PDMP success in the U.S. and draw possible solutions from the list of facilitators. Practitioners should consider the context of their state and organization when determining which facilitators would most promote PDMP IS success. Combining facilitators may be the best route to PDMP IS success in certain situations.
PDMP – Background

• Prescription Drug Monitoring Programs (PDMP)
  • Electronic database that tracks controlled substances prescribed/dispensed\(^46\)
  • Administered by the state
  • AL – dispensing data submitted every 24 hours for most health care organizations
  • State data sharing\(^47\)
    • 47 states
    • PMP Interconnect
    • Inter-state data access varies by state
• State boards require PDMP review when prescribing controlled substances
  • AL - Frequency depends on MME (CDC guidelines)
  • Exceptions – hospice, long-term care facilities\(^48\)
• Benefits/Effectiveness
  • Prevent prescription drug misuse, diversion\(^49\), doctor shopping\(^31,49\)
  • Promote appropriate pain management\(^50,51\)
PDMP – Background

• Purpose – aid in appropriate prescribing decisions
  • Want PDMP to be used to its full potential & purpose

• Challenges to PDMP Success$^{52,53}$
  • Lack of time
  • Lack of registration/access issues
  • Fear of legal ramifications
  • Reporting and workflow issues
U.S. State Opioid Dispensing Rates

CDC U.S. Opioid Dispensing Rates by State\textsuperscript{54}.
Introduction

• Purpose
  • Literature review of barriers and facilitators to PDMP information system (IS) success in the US
  • DeLone and McLean IS Success Model
    • 6 interrelated dimensions of IS success
    • Evaluate IS components that contribute to system success
  • Provide insight on what barriers exist to PDMP IS success and possible facilitators to address those barriers
Methods

Literature Search Process (Adapted from the PRISMA framework\textsuperscript{55}).
Methods

IS Success Model (Adapted).
Results

- **Information Quality**
  - Complete, accurate, timely data

- **System Quality**
  - System design, system ease of use, system performance

- **Service Quality**
  - System support

- **Intention to Use - Registration**
  - Access, awareness, lack of time, training, utilization

- **Use – Actual use**
  - Access, awareness, lack of time, training, utilization

- **User Satisfaction**
  - Approval, perceived usefulness

Model build out with literature attribution by factor (Adapted).
Results

Use was densest for both barriers AND facilitators
<table>
<thead>
<tr>
<th>Main Construct</th>
<th>Sub-Construct</th>
<th>Barriers</th>
<th>Facilitators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>Complete</td>
<td>Lack of Interstate Data Sharing</td>
<td>Increase Interstate Data Sharing</td>
</tr>
<tr>
<td>Quality</td>
<td>Data</td>
<td>Only Tracking Schedule II Data</td>
<td>Expand Number of Scheduled Drug Types in Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Data Standardization</td>
<td>Data Standardization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Incomplete Data</td>
<td>Include More Detailed Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data Not Available from different distributor types</td>
<td>Distributor Data Available Regardless of Where Dispensing Took Place</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Process Standardization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data Security Concerns</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data Privacy Concerns</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deficiencies in Data Transmission</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Historical Data</td>
<td></td>
</tr>
<tr>
<td>Accurate Data</td>
<td>Duplicate</td>
<td>Duplicate Data</td>
<td>Create Probabilistic Patient ID Matching Procedure</td>
</tr>
<tr>
<td></td>
<td>Data</td>
<td></td>
<td>Improve Record Matching</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data Inaccuracy</td>
<td>Create Unique Patient Identifier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Too Many Data Entry Points</td>
<td>Improve Data Accuracy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Interstate Data Inaccuracy</td>
<td>Implement Mechanisms to Decrease Inaccurate Data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provider Data Inaccuracy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Distributor Data Inaccuracy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data Entry Errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drug Dose Data Inaccuracy</td>
<td></td>
</tr>
<tr>
<td>Timely Data</td>
<td>Lack of</td>
<td>Lack of Timely Data</td>
<td>Increase Update Frequency</td>
</tr>
<tr>
<td></td>
<td>Timely</td>
<td></td>
<td>Real-time Data Updates</td>
</tr>
<tr>
<td></td>
<td>Data</td>
<td></td>
<td>Timeframe Requirements for Reporting Relative to Dispensing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Timely PDMP Reporting</td>
<td>Increase Reporting Speed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Timely Distributor Data</td>
<td>Real-time Data Updates</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Timely Data</td>
<td>EHR Integration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Increase Data Entry Time</td>
</tr>
</tbody>
</table>

**Results**
Literature Review - Major Takeaways

- Themes most frequently reported
  - Interstate data sharing
  - EHR-Integration
  - Delegate access
  - Mandates
- Some facilitator themes contradict each other
- Combining facilitators may yield optimal results
- Context should be assessed before determining appropriate facilitators
Limitations

- Only U.S. studies
- Excluded Net Benefits dimension
- Model only gives IS success perspective
PDMP Barriers & Facilitators – Alabama Specific

- AL specific (also suggested training areas)
  - Mitigate data submission error (dispensers)
  - Patient ID Matching
  - Physicians are responsible for maintaining accurate delegate authority (physicians)
  - Interpretation of Narx Scores (prescribers and pharmacists)
  - How to talk to patients about information found in the PDMP (prescribers and pharmacists)
PDMP Training

- PDMP registration (prescribers and delegates)
- Update your account
- Obtain patient controlled substance prescription history report
- Understand patient Narxcare report
- Multi-state patient search
- Understanding your prescriber report

Alabama Public Health Prescription Drug Monitoring Program (PDMP)\textsuperscript{56}. 

\textsuperscript{56} The Prescription Drug Monitoring Program (PDMP) is a program developed to promote the public health and welfare by detecting diversion, abuse, and misuse of prescription medications classified as controlled substances under the Alabama Uniform Controlled Substances Act. The Alabama Department of Public Health and the Auburn University Harrison School of Pharmacy present programs designed to enhance PDMP users' ability to appropriately and optimally use the PDMP in their professional environment. 5.5 hours of ACPE approved continuing education credit, 5.5 ABSWIE, 6.6 ABN, ACCME and ANCC credits pending. See our flyer for details, and visit the Harrison School of Pharmacy to register. Registration opens on January 15, 2020.
Auburn University Harrison School of Pharmacy. 

Albama's PDMP: Drugs of Abuse, PDMP Updates, and Regulations - Recorded Webinar
Albama's PDMP: Drugs of Abuse PDMP Updates, and Regulations ... attendees' knowledge regarding PDMP use. This seminar will enhance ... This seminar will enhance PDMP users' ability to appropriately ... 

Albama's PDMP: What You Need To Know - Recorded Webinar
Albama's PDMP: What You Need To Know - Recorded ... attendees' knowledge regarding PDMP use. This seminar will enhance ... This seminar will enhance PDMP users' ability to appropriately ... 

Albama’s Prescription Drug Monitoring Program: A Key Tool in the Fight Against Opioid Use Disorder (OUD), Dr. Brent Fox focuses on the role of the PDMP as a tool to fight opioid ... prescribing in the country, yet PDMP use is not required for pharmacists ... required for pharmacists. PDMP use is required for prescribers ...
PDMP EHR-Integration

- Link to PDMP in EHR
- UAB integrated in 2019
  - Positive feedback inpatient, clinics and ED
  - Improved workflow
  - Decrease access barriers (if account is current)
- No cost to all Alabama healthcare providers via their EHR and pharmacy management system vendors and PMP Gateway
- However, not all EHR and pharmacy management system vendors are currently integrated. Your integration process and duration time is dependent upon your provider
- More info: Alabama Public Health EHR Integration
Conclusion

• PDMP is a tool used to help make appropriate prescribing decisions
• Evidence shows PDMPs have benefits
• Since PDMPs can be viewed as a technology artifact, it made sense to apply an IS frame
• Some facilitators may need to be combined to maximize PDMP IS Success.
• Context can play a large part in deciding how to handle PDMP IS Success hurdles
• Common barriers - Suggested training topics specific to AL
• AL PDMP training resources
• PDMP EHR-Integration
Questions/Feedback

- Please contact Heather D. Martin at martinhd@uab.edu for questions or feedback
References


References


References


References


References


