



# Improvements to Prescription Drug Monitoring Programs Can Inform Prescribing

PDMP administrators share views on how enhancements can be implemented

## Overview

Prescription drug monitoring programs (PDMPs) are electronic databases that allow health care professionals to view their patients' controlled-substance prescription histories in order to better inform prescribing, dispensing, and treatment decisions. PDMPs can help reduce the misuse and diversion of prescription opioids and other controlled substances.

Historically, health care providers have reported that time constraints make it difficult to adequately review the information in PDMP patient records, also known as profiles.<sup>1</sup> To address this barrier, some states have made, or are planning to make, improvements to how patient profiles are presented to prescribers. Instead of displaying controlled-substance prescriptions in a list, enhanced PDMP profiles summarize or graphically display a patient's controlled-substance use. These profiles can aid providers in making better prescribing decisions and identifying patients at risk for substance use disorder (SUD) or overdose.

Pew conducted online focus groups of PDMP administrators to gauge support for enhanced PDMP profiles, perceived barriers to implementation, and recommendations to advance this work. Twenty-one administrators from 18 states participated. Key themes included:

- **Support for including summary information about a patient's controlled-substance prescription history in PDMP profiles.** PDMP administrators noted that morphine equivalent dosage (MED) calculations—a standardized measure that can help assess dose-related risk of overdose—and other thresholds that indicate risk are valuable data to include in the patient profile. However, some were concerned that this condensed information might dissuade prescribers from examining patient profiles in detail.
- **Interest in providing enhanced profiles that include additional data fields.** Some participants would like the PDMP to include additional data, such as overdose events, to better inform health care professionals. They also supported presenting data in new ways to make the information more accessible, but cautioned against making the PDMP overly cluttered.
- **Debate over how other health information technologies could be leveraged to enhance the PDMP.** Administrators shared a belief that implementing enhancements via electronic health records (EHRs) would allow health systems to tailor risk indicators in the PDMP. For example, a pain clinic might set a higher risk threshold for MED than a general practice care setting. However, others voice concern that enhancements made in EHRs could be costly to health systems and may limit the ability of PDMP administrators to standardize risk indicators across the state.
- **Barriers to implementing enhanced profiles.** PDMP administrators described barriers that include limited availability of funding, challenges with vendor negotiations, and whether existing legislative or regulatory authority allows for such enhancements.
- **The importance of collaboration.** Administrators recommended that states work together with all involved stakeholders, including groups representing prescribers and researchers, to develop, implement, and test the value of enhancements.

## Background

PDMPs are typically accessed via a web portal that health care providers must log in to and then input patient-identifying information (e.g., first and last name, date of birth) in order to access the individual's controlled-substance prescription history. A standard patient profile consists of a spreadsheet-type display that lists information on controlled-substance prescriptions, including the names and strengths of drugs dispensed, and the prescribers and pharmacies from which prescriptions were obtained. Prescribers must scan this list and, in states that lack enhancements, make their own assessment of risk factors, including calculations of daily MED, numbers of prescribers and pharmacies visited, and overlapping benzodiazepine and opioid prescriptions. After examining the raw data, a health care provider makes treatment decisions, including whether or not to provide a new controlled-substance prescription to the patient.

Clinicians' use of PDMPs varies based on a number of factors, including the prescriber's clinical specialty and time constraints. One study found that clinicians in pain clinics tend to use the PDMP with every patient, every time, while clinicians in other settings, such as emergency rooms, checked the PDMP only when they suspected a patient was seeking a controlled substance for a nonmedical reason.<sup>2</sup> In states that allow access to PDMP data via EHRs—digital patient records that contain a patient's medical history, including diagnoses, treatment plans, allergies, and laboratory and test results—prescriber use of the PDMP increased.<sup>3</sup>

Research indicates that once a prescriber accesses PDMP data, there can be significant differences in how the data are interpreted and applied to clinical decision-making.<sup>4</sup> While some variation in the interpretation of PDMP data is expected between prescribers, researchers hypothesize that limited guidance on how to interpret and respond appropriately to PDMP profiles is a factor in different interpretations of PDMP data.<sup>5</sup>

To address these shortcomings, as of May 2017 roughly half of U.S. states had developed enhanced PDMP patient profiles that provide summary information, risk assessments, or data visualizations.<sup>6</sup> States can develop their own enhancements or adopt a commercially available software product offered by PDMP vendors.

## Methods

PDMP administrators from all states with operational PDMPs were invited, using a publicly available contact list,<sup>7</sup> to participate in online focus groups. Fliers were also distributed to PDMP staff and public health officials attending a national meeting of a grant program that provides federal support for PDMP administration. Twenty-one PDMP administrators representing 18 states participated in two online focus groups in May 2017 (three states had more than one PDMP administrator participate). All participants provided informed consent and were guaranteed confidentiality.

Administrators were sorted into one of two groups based on their self-report of whether or not the state had already made enhancements to the PDMP (see Appendix A for full questionnaire). Twelve administrators representing 10 states participated in a focus group for states with existing enhancements, and nine administrators representing eight states participated in a focus group for states without them. Online focus group discussion spanned three days. Using NVivo v11 (software used for qualitative data management and analysis) researchers analyzed focus group responses to identify common ideas and themes.<sup>8</sup>

## PDMP administrators expressed interest in, but concern about, summary information

PDMP administrators recognized the value of enhanced PDMP profiles, but expressed concerns that providing summary information, such as MED calculations, and thresholds indicating risk may inhibit clinical judgment.

### Summary information and risk indicators

Focus group participants reported that the simplest enhancement to the presentation of raw PDMP data is the inclusion of summary information (e.g., total number of controlled-substance prescriptions during the past year or other specific period of time, total daily MED for all active prescriptions). Overall, PDMP administrators agreed that enhanced profiles are helpful to prescribers, with some describing constraints on how the data are displayed in a standard profile—for example:



[A standard profile] is just not useful for the very busy provider who runs across a very long list. It can take a lot of time to try and manually assess the use pattern for problems.”

— Focus group participant

Administrators were particularly interested in adding risk indicators to signify when a measure or characteristic exceeds a specific threshold in order to help prescribers identify patients at potential risk for diversion, SUD, or overdose. The most common indicators used are specific numbers of prescribers and/or pharmacies visited, daily MED exceeding a predetermined level, and concurrent opioid and benzodiazepine prescriptions.

In addition to displaying summary information and risk indicators within individual patient profiles, PDMP administrators reported efforts to incorporate dashboard-based unsolicited alerts (sometimes called “push notifications”) based on whether a patient exceeds a specific threshold associated with risk. In this instance, providers receive such alerts for their patients upon accessing the PDMP. This enhancement differs from traditional unsolicited reports in which prescribers are sent risk information about specific patients through email or postal mail on a schedule defined by the state.

Threshold values for risk indicators vary widely among states, with many states reporting different thresholds for multiple provider episodes (e.g., visiting six prescribers or six pharmacies in six months, five prescribers in one month) and daily MED thresholds (e.g., 90 milligrams, 120 mg). Despite the variability, PDMP administrators found value in this type of enhancement:

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“ The summary lets you know [at a glance] the number of prescribers, prescriptions, and pharmacies. If you have run a 90-day report and see 1, 1, and 1 across that section ... is this a potential ‘at risk patient’? Probably not. But, if you have 5, 5, and 5 ... time to dig into the report to see more detailed information.”

— Focus group participant

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Among states with enhanced PDMP profiles, inconsistencies exist over which metrics, when exceeded, indicate risk (e.g., dosage over a specific threshold, or number of prescribers and/or pharmacies over a threshold). Moreover, PDMP administrators state that prescribers and other end users are confused about varying risk thresholds used by federal and state agencies, as well as thresholds used by researchers studying prescribing risk:

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“ I regularly get phone calls or emails asking why we use Guideline A when their facility prefers to use Guideline B. We can’t seem to please everybody.”

— Focus group participant

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PDMP administrators also had reservations about a risk score used in commercially available software due to a lack of publicly available information about the methodology used for its calculation. Some administrators preferred that risk indicators and thresholds be tailored to the clinical setting:

“ [Our state] does not provide summary scores other than MED calculations. Flags, when used, should be highly individualized for the provider’s particular specialty. ... Overgeneralization can be a pitfall which may adversely affect patient care.”

— Focus group participant

## MED calculations

Many PDMP administrators support providing a daily MED calculation in the PDMP profile, but some expressed concern about the variability in, and validity of, approaches used to calculate MED. Drugs dispensed by opioid treatment programs, where patients receive medication and other treatment for the management of SUD, are not reported to state PDMPs. But when buprenorphine is prescribed by providers of office-based opioid treatment, it is filled at a pharmacy and reported to the PDMP.<sup>9</sup> Dosages of methadone and buprenorphine are often higher when used to treat opioid use disorder (OUD) compared with when these drugs are used for chronic pain.<sup>10</sup> Those higher doses translate to higher MED calculations that can trigger concern, but may, in fact, be appropriate for treating OUD.

One state PDMP recently introduced an MED calculation embedded in the PDMP by its vendor but would prefer to use its own calculation to account for these higher MED values for buprenorphine. However, the state PDMP reported that the vendor does not allow for this customization. Focus group participants discussed the benefits and disadvantages of MED calculations in enhanced profiles:

“ MED is important as an objective standard for the provider to be able to quantify and assess risk incurred by patients receiving opioid medications, especially when being received from multiple sources.”

— Focus group participant

“ Our vendor may be using a version of the Centers for Disease Control and Prevention calculation that is meant more for public health surveillance than for individual [clinical] care decisions. The [buprenorphine conversion] being used is higher than many experts in my state feel it should be. This could result in patients not getting opioids when they should or being given too much.”\*

— Focus group participant

\* It was not confirmed that the state’s vendor was using a version of the CDC’s MED calculator. In September 2017, after the focus groups were conducted, CDC removed conversion factors for medication-assisted treatment and advised that its MED calculator should not guide dosing of these drugs. It has not been determined whether all PDMPs that include MED calculations have changed in response to this guidance.

## Fear of inhibiting clinical judgment

Some administrators were concerned that providing summary calculations, risk scores, and alerts could override clinical judgment and affect patient care:

“ We walk a fine line between empowering the user and appearing to make decisions on their behalf. We have to be very wary of labeling a patient ... [a] misuser, even if not in those terms, if we do not have diagnosis or other background information to see the bigger picture.”  
— Focus group participant

“ We would never want to display risk factors or overdose risk score. In [our state], the PDMP is meant to be a clinical decision-making tool. We’re providing the tool, but we want the provider to make the decision. Having scores and risk factors alters that and could impact their decision-making.”  
— Focus group participant

## Other existing and potential PDMP enhancements

PDMP administrators described enhancements their states have made, or are considering, to augment standard patient profiles. Supplementary enhancements discussed include additional data fields (e.g., prescriber phone number) within the patient profile and sortable and graphical displays of data.

### Additional PDMP data fields

Although PDMP data fields are not standardized across states, most include the drug name; formulation; strength; National Drug Code (a number used to identify drug products); days’ supply; source of payment; date prescribed; date dispensed or filled; patient date of birth and gender to aid confirmation of patient identity; and prescriber and pharmacy names and addresses. A few states include additional fields for information about the prescriber and dispenser (e.g., phone number, email address) as a means to facilitate communication, with many other administrators expressing an interest in including this information as well:

“ We currently provide only the prescriber name and address and dispenser name and address. This can make it difficult for authorized users to contact another provider in situations where they may need to coordinate the patient’s care.”  
— Focus group participant

Administrators also noted that information beyond a patient's prescription history, such as whether the patient holds a medical marijuana card or has had an overdose event, would be helpful to clinicians. As of July 2017, one state required law enforcement officials to report overdoses to the PDMP and another required that medical professionals do so.<sup>11</sup> Depending on the state, inclusion of nonfatal overdose events in the PDMP likely requires a change in legislation or regulation, development of new PDMP data fields, and the expansion of individuals or entities (e.g., law enforcement, hospital emergency departments) authorized to submit data to the PDMP. Finally, PDMP administrators discussed the inclusion of contact information for SUD treatment agencies in the PDMP to facilitate referrals:

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“ [The state] is building a treatment locator service that will assist clinical professionals in connecting patients with [SUD] treatment services. ... This would be important to provide ... when available.”  
— Focus group participant

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## Presentation of data

PDMP administrators also reported planned or implemented improvements related to the prescriber's viewing experience. They described user-directed sorting functions, including the ability to sort controlled-substance prescription records by each of the column headings (e.g., date dispensed) or by pharmacologic class (e.g., opioids, benzodiazepines). One PDMP administrator described feedback from PDMP users who favor the sorting features, while another predicted that this feature will eventually become commonplace:

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“ The new system is much easier to use. They especially like the ability to sort information.”  
— Focus group participant

“ As PDMPs progress, I would be surprised if we don't start to offer multiple ways to sort and view the data.”  
— Focus group participant

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Another design feature discussed was including graphs of the data or maps displaying prescribing and dispensing locations:

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“ For me, the visualization of how far and how often someone is traveling [from their home address to a prescriber and pharmacy] is very helpful information and isn't something intuitive without a map to help present it.”  
— Focus group participant

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Nonetheless, PDMP administrators emphasized the need to ensure user comprehension, warning against enhanced PDMP profiles that become overly cluttered with extraneous information:

“ An enhanced PDMP is worth the investment as long as the additional information provided is clear, concise, and easily interpretable by users. We do not want this invaluable tool to become too cumbersome to interpret and then actually reduce utilization [of the PDMP].”

— Focus group participant

## Challenges associated with implementing enhanced profiles

Prior to implementing enhanced profiles, PDMP administrators, end users, and other stakeholders must determine the optimal platform for implementation (e.g., within the PDMP, or through integration of PDMP data with EHRs).<sup>12</sup> Funding, contract negotiations with vendors, and the legality of enhancements must also be considered.

### Platform for implementing enhanced profiles

PDMP administrators debated whether resources should be committed to implement enhanced profiles within the PDMP, or whether enhancements should be applied when PDMP data are brought into EHRs. The process for integrating PDMP data within EHRs would vary from state to state due to differences in resource availability and state rules or regulations, but once complete, it would enable clinicians to access both PDMP and health record information through a single sign-on. Integration has been shown to increase prescriber use of the PDMP.<sup>13</sup> One PDMP administrator noted that a reported advantage of providing enhanced profiles within EHRs is the ability of health systems to tailor risk thresholds for specific clinical specialties or care settings:

“ The hard part [of including summary information] is trying to find summary information that all practitioner specialties would want. My preference is to serve data up via our HIE [health information exchange] and let each care setting (pharmacy, ED, primary care, etc. ...) determine how to display the data to best assist their patients.”

— Focus group participant

PDMP administrators note potential disadvantages to implementing enhanced PDMP profiles through EHRs. These include the cost of such enhancements to health systems, and reduced state control over profile features and risk indicators. Another disadvantage discussed was a reduced ability to monitor for the appropriateness and extent of PDMP use (e.g., compliance with mandatory PDMP use laws) in instances where the PDMP is accessed by a prescriber in a hospital or clinic with numerous providers. In situations where PDMP data are integrated with EHRs, PDMP staff must rely on hospital systems to identify and authenticate end users. Administrators also expressed concerns that many health systems and clinics lack access to EHRs capable of delivering enhanced profiles.



In Wisconsin, the entire enhanced report, including alerts, maps, and other visualizations, has been integrated into EHRs.<sup>14</sup> States can work with their vendors to assess the feasibility of this type of integration.

## Financial and other barriers to implementing enhanced profiles

PDMP administrators reported several barriers keeping their states from implementing or modifying enhanced PDMP profiles. Even with federal funding to enhance PDMPs, a primary barrier is the financial burden of changing or updating the PDMP interface:

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“ The [state] PDMP does not have a current sustainable funding source but [we] are continuing to explore options including [health professional] licensing fees. Our program has received several federal grant awards, which have been very vital for our program.”  
— Focus group participant

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PDMP administrators also reported logistical and legislative barriers. Logistical barriers include contract negotiations with vendors and the time required to upgrade software. One PDMP administrator described the lengthy process of developing a prescriber dashboard:

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“ We were required to go through an extensive contract amendments period with our software vendor. ... The build and testing took well over one year to complete.”  
— Focus group participant

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One legislative barrier is the concern that enhanced profiles are outside the scope of state laws authorizing the PDMP:

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“ Some of the information displayed, such as risk factors and score[s], can be [considered an] interpretation of PDMP data. That process is currently not authorized in our law and anything not specifically authorized is assumed to be prohibited.”  
— Focus group participant

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## Participant recommendations for implementing enhanced profiles

PDMP administrators suggested key steps for implementing enhanced profiles. Primary recommendations included: involving key stakeholders in the profile enhancement process, both before implementation and as part of a continuous improvement process; reporting outcomes to key stakeholders to demonstrate the value of the PDMP; and seeking grants or other funding to implement enhanced profiles.

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“ The first suggestion would be to ensure that key stakeholder groups such as the state medical associations are engaged. If they perceived value to the enhanced patient profile, they may have significant clout to help overcome any opposition or barriers. The second suggestion would be to phase in the patient profile enhancements. Starting with some basic information such as just an MED calculation may help demonstrate the value to incorporating additional features.”

— Focus group participant

“ Several opportunities to acquiring funding are possible, such as state and federal grants, [using] licensure fees [to support the PDMP], or state appropriations. In this time of budget constraints, the latter two may be the least popular.”

— Focus group participant

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## Conclusion

Many states are exploring or implementing enhancements to PDMP profiles, and PDMP administrators remain cautious but supportive of these changes. Although several important concerns were identified, the PDMP administrators encouraged enhancements such as the ability to sort data; maps that show distances between patients, prescribers, and pharmacies; and graphical displays of patients' controlled-substance prescription use.

Moving forward, states should collaborate with all stakeholders in an interdisciplinary way to determine optimal risk indicators and thresholds that are reported to prescribers. Enhancements should be evaluated to determine whether they influence prescribing behavior in a beneficial way. Future research should also investigate whether these enhancements increase the safety of controlled-substance prescribing and are beneficial to patient care.

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## Appendix A: Registration survey

### Focus group registration survey

You will be assigned to one of two separate focus groups based on features of your state's patient profile (the information provided when a clinician is logged into the PDMP or runs a PDMP query).

Please answer the following questions:

1. Do patient profiles in your PDMP currently provide any information about the patient's risk factors (for example, MED above a certain threshold or number of prescribers above a threshold)?
  - YES
  - NO
2. Do patient profiles in your PDMP currently provide any information summary scores (e.g., NARxCHECK)?
  - YES
  - NO
3. Do patient profiles in your PDMP currently provide any visual representation (e.g., graph) of the patient's prescriptions?
  - YES
  - NO
4. Do you have a detailed plan in place to enhance your PDMP profile in any of the specified ways (patient risk factor information, summary scores, visual representations) in the next year?
  - YES
  - NO

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Administrators answering yes to questions 1-3 were sent a login for the Enhanced PDMP Profile focus group, and all others were sent a login for the Non-Enhanced PDMP Profile focus group. Question 4 was not used to determine focus group assignments.

## Endnotes

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