

Prescription Drug Monitoring Program Center of Excellence at Brandeis

Briefing on PDMP Effectiveness

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Briefing on PDMP Effectiveness

SUMMARY

Evidence continues to accumulate that prescription drug monitoring programs (PDMPs) are effective in improving clinical decision-making, reducing doctor shopping and diversion of controlled substances, and assisting in other efforts to curb the prescription drug abuse epidemic. This briefing was first released in March, 2012 with 35 references; this is the third revision, with over 60 references.

The Prescription Drug Abuse Epidemic

Addiction, overdoses and deaths involving non-medical prescription drug use, especially narcotic pain relievers, have risen dramatically over the last decade. In 2010, drug-related poisonings were the leading cause of death due to unintentional injuries in the United States. The number of overdose deaths involving prescription opioids has more than tripled since 1999; in 2010 these deaths were greater than those involving heroin and cocaine combined.¹ A recent study estimated that in 2006 the total cost in the United States of nonmedical use of prescription opioids was \$53.4 billion.² More information regarding the epidemic is available on the PDMP Center of Excellence website.³

The Essential Role of Prescription Drug Monitoring Programs

PDMPs collect data from pharmacies on dispensed controlled substance prescriptions and make it available to authorized users, often by means of a secure, electronically accessible database. As of July 2014, 49 states and one territory had passed legislation authorizing a PDMP, and 48 states had an operating PDMP. Research and accumulated experience strongly suggest that PDMPs serve essential functions in combating the prescription drug abuse epidemic.^{4,5,6,7,8} They can help identify major sources of prescription drug diversion such as prescription fraud, forgeries, doctor shopping⁹ and improper prescribing and dispensing. PDMPs are also important resources for practitioners and third party payers, giving them information on patients' use of controlled substances that is crucial for providing good medical care and ensuring patient safety. A prospective cost-benefit analysis prior to the launch of the Wisconsin PDMP suggested that the economic benefits produced by the program would far exceed the costs of operation, producing savings for the state in health care costs, lost productivity, and reduced drug diversion investigation times in excess of 10 million dollars annually.¹⁰ There are recent indications that prescription drug overdose deaths are declining in some jurisdictions, for instance Florida and Kentucky, likely due in part to the promulgation and increased use of PDMPs.¹¹ More information on PDMPs is available on the PDMP Training and Technical Assistance website.¹²

Listed below are a selection of research studies, evaluations, surveys, reports and data¹ suggesting that PDMPs are effective in improving medical care; reducing doctor shopping, inappropriate prescribing, drug diversion and prescription fraud; and assisting in drug investigations. Such outcomes can contribute to lowering rates of addiction, overdose and death associated with misuse of prescription drugs, thus reducing the health care and public safety costs attributable to such misuse. As PDMPs continue to mature and adopt evidence-based [best practices](#), their effectiveness is likely to increase. Future revisions of this briefing will incorporate additional findings on PDMP effectiveness as they come to light.

¹ The studies and reports mentioned in this briefing should not be considered exhaustive of all information bearing on PDMP effectiveness.

Improving clinical decision-making and patient care

- A study of medical providers in Ohio emergency departments found that 41% of those given PDMP data altered their prescribing for patients receiving multiple simultaneous narcotics prescriptions. Of these providers, 61% prescribed no narcotics or fewer narcotics than originally planned, while 39% prescribed more.¹³ Another study found that consulting the PDMP increased physicians' confidence that the controlled substances they prescribed were medically warranted.¹⁴ This indicates that PDMP data can help inform sound clinical decision-making to ensure prescriptions are medically necessary, reducing illicit use of controlled substances.
- Two studies have found that viewing data from a PDMP can help inform and confirm physician judgments concerning a patient's prescription drug seeking behavior, helping to improve prescribing.¹⁵
- A survey of prescribers in Rhode Island and Connecticut found that those who made use of PDMP data were more likely than non-users to take clinically appropriate action in response to suspected cases of prescription drug abuse or diversion by patients, such as conducting drug screens or referring them to substance abuse treatment.¹⁶
- The Center for Health Policy at the Fairbanks School of Public Health conducted a survey of medical professionals on awareness and impact of Indiana's PDMP. Of respondents who had changed their prescribing practices in the past year, over 90% reported prescribing fewer controlled substances, and over 50% of these respondents cited viewing PDMP data as the main reason for this change.¹⁷
- The Oklahoma PDMP conducts an ongoing survey of prescribers; preliminary findings suggest PDMP utilization has an impact on clinical decision-making. Results show that 63% of respondents report that PDMP data has helped them identify patients who were abusing prescription medications, and 64% said data helped identify patients who were doctor shopping. The survey also found that based on a PDMP report, 21% of prescribers referred patient(s) to treatment, 21% to a mental health professional, 64% to a pain management specialist, and 25% to law enforcement; 71% reported changing the type of controlled substance or refusing to prescribe a controlled substance as a result of viewing PDMP data.¹⁸
- A survey of prescribers and pharmacists in Oregon found that majorities of respondents thought that use of the PDMP would be very useful in monitoring prescriptions and reducing doctor shopping. Many reported taking clinically relevant action after viewing PDMP data, including talking to the patient to confirm or disconfirm suspicions of doctor shopping, altering prescribing in response to new information, and referring patients to substance abuse treatment or pain management.¹⁹
- In California, 74% of physician responders to a survey indicated they had changed their prescribing practices to a patient as a result of using PDMP Patient Activity Reports [PARs], and 91% rated the "effectiveness of the PAR in maintaining the care and health of your patient" as good to excellent.²⁰
- A 2010 survey of users of Kentucky's PDMP, Kentucky All Schedule Prescription Electronic Reporting (KASPER), found that PDMP reports aided clinical practice, with 70% of respondents judging them "very" or "somewhat" important in helping them decide what drug to prescribe a patient. The survey also found that nearly 90% of prescribers and pharmacists responding to the survey "refused to prescribe or dispense a controlled substance based on the information contained in a KASPER report."²¹

- An impact evaluation of the Maine PDMP found that 97% of prescribers and pharmacies responding to a survey found the PDMP to be useful in monitoring prescriptions and controlling doctor shopping.²²
- A recent survey of Massachusetts prescribers receiving unsolicited PDMP reports on possible doctor shoppers among their patients found that only 8.4% of respondents knew about all or nearly all the other prescribers for patients reported on. This indicates that proactive reporting of PDMP data alerts prescribers about possible doctor shopping, which in turn can inform their prescribing practices.²³

Identifying and reducing doctor shopping

- A study of New York State's PDMP (referred to as a triplicate prescription program in the 1980s) found that in the year following the inception of the program in 1988, prescribing of benzodiazepines to individuals suspected of drug diversion fell by 95% as measured by insurance claims data.²⁴
- Data from the Virginia PDMP show that in the period following a rapid increase in PDMP data utilization in 2009, the number of individuals meeting criteria for doctor shopping dropped by 44% in 2010.²⁵ From 2012 to 2013, as requests for information from the PMP increased 50%, this number dropped again, by 73%.²⁶
- Following initiation of the Arkansas PDMP in March 2013, the numbers of individuals meeting a threshold for doctor shopping (seven or more prescribers and seven or more pharmacies within 90 days) fell from 114 (March-May 2013) to 31 (December 2013-February 2014).²⁷
- After inception of the Florida PDMP in September 2011, doctor shopping (five or more prescribers and five or more pharmacies within 90 days) declined 51% from FY 2012 (October 1, 2011 to September 30, 2012) to FY 2013. This decline is partially attributable to use of the PDMP, which logged over 3.7 million queries to its database by prescribers and pharmacists in FY 2013.²⁸
- In 2011, Ohio passed legislation instructing medical boards to promulgate rules requiring prescribers to check the PDMP in advance of prescribing certain controlled substances. Subsequently, doctor shopping (five or more prescribers and five or more pharmacies in a three month period) dropped by over half, from a rate of over 25 per 100,000 residents in the first quarter of 2010 to just over 10 per 100,000 in the last quarter of 2013.²⁹
- In New York and Tennessee, doctor shopping rates declined after utilization of their PDMPs rose rapidly in response to legislative mandates for prescribers to check the PDMP before first prescribing certain controlled substances (e.g., opioids, all schedule 2 drugs) and at regular intervals thereafter. After the mandate went into effect in Tennessee (April 2013), the number of individuals meeting a threshold for doctor shopping (being prescribed to by five or more prescribers and filling prescriptions at five or more pharmacies in a three month period) declined from 2,194 (August-October, 2012) to 1,395 (May-July 2013), down 36%. In New York, where the mandate went into effect in June 2013, the number of individuals meeting this threshold decreased by 74.8% from the fourth quarter of 2012 to the fourth quarter of 2013.³⁰
- An analysis by Wyoming's PDMP indicates that as prescribers and pharmacists received unsolicited PDMP reports concerning likely doctor shoppers, and as they requested more reports on patients, the number of individuals meeting a threshold for doctor shopping declined, from 316 in 2009 to

169 in 2013. This suggests that PDMP reports prompt prescribers and pharmacists to reduce the availability of controlled substances to patients engaged in doctor shopping, thus reducing addiction, abuse and costs related to prescriptions.³¹

- An analysis of data from the Nevada PDMP indicates that for those probable doctor shoppers for whom unsolicited reports were sent, the mean number of dosage units of controlled substances dispensed to them declined on average 41% in the year following the reports. After the inception of unsolicited reporting in 1997, the mean number of prescribers who prescribed to those identified as probable doctor shoppers dropped from 22 in 1997 to 14 in 2002, a decline of 36%, and the mean number of pharmacies that dispensed to probable doctor shoppers dropped from 16 to 12, a decline of 25%.³²
- Washington State's PDMP provides data to its Medicaid and workers' compensation programs. Access to PDMP data, which tracks all dispensed prescriptions including those paid for by cash, has allowed both programs to more quickly and reliably identify patients who may be doctor shopping or obtaining medically unnecessary prescriptions. For example, in a match of Medicaid enrollees to PDMP data, more than 2,000 persons were identified who obtained a controlled substance prescription paid by Medicaid and a second prescription paid in cash on the same day.³³
- After four years of increases in the diversion of high dosage buprenorphine via doctor shopping in the Bouche de Rhone area of France, a measure of doctor shopping declined 22% in the period following the initiation of prescription monitoring for buprenorphine, with no marked effect on treatment access.³⁴

Impact on controlled substance availability and prescribing

- An independent evaluation of Kentucky's PDMP noted that in 2006, distribution of oxycodone, as measured by grams per 100,000 population from the Automation of Reports and Consolidated Orders System (ARCOS) system, was highest in Florida compared to other states on interstate Route I-75, while distribution of hydrocodone was highest in Tennessee. Since 2004, oxycodone distribution in Kentucky, a state with a well-established prescription monitoring program, rose at a much lower rate than in either Florida or Tennessee, neither of which had active PDMPs during this period.³⁵
- A national evaluation comparing states with and without PDMPs found that proactive PDMPs were associated with slower growth in the per capita availability of prescription pain relievers and stimulants.³⁶
- A study comparing PDMP states with non-PDMP states found that PDMP states had decreases in the amount of opioid shipments.³⁷
- The presence of PDMPs collecting prescription information on Schedule II controlled substances was associated with lower outpatient opioid prescribing as measured by insurance claims data when compared with states not collecting such information.³⁸
- After inception of its PDMP, Florida saw a 24% decline in prescriptions for oxycodone, and an 8% decline for methadone, two drugs most implicated in prescription overdose and death.³⁹
- Subsequent to adoption of mandates for prescribers to use their PDMPs, Kentucky, Tennessee and New York saw declines in the prescribing of opioids. In Kentucky, doses dispensed declined for

hydrocodone (-10.3%), oxycodone (-11.6%), and oxymorphone (-35%); in Tennessee the number of opioid prescriptions fell over 7% and the total mme (morphine milligram equivalents) dispensed declined nearly 6%; in New York total opioid prescriptions decreased by over 9%.⁴⁰

- Numbers of prescriptions and doses for pain relievers have dropped in Virginia from 2012 to 2013 as utilization of the PMP has increased.²⁶
- Within six months of the inception of a British Columbia prescription monitoring system, medically unwarranted prescriptions for opioids fell by 33% and for benzodiazepines by 49%.⁴¹

Association with improved health outcomes

- According to a report by the state Office of Drug Control Policy, in 2012 Kentucky had 1,004 opioid overdose deaths, down from 1,023 in 2011, the first decline in a decade. State health officials attribute this decline to laws mandating prescriber use of the PDMP and better regulation of pain clinics.⁴²
- Following the implementation of the Florida PDMP in 2011 and adoption of other measures to address prescription drug abuse and diversion, drug-related deaths in Florida have declined. Deaths attributable to oxycodone overdose fell by 41% from 2011 to 2012 and deaths caused by any prescription drug fell by 18%.⁴³
- Oklahoma recorded declines in drug-related overdoses for the first time in ten years, from 807 in 2011 to 578 in 2012. A public safety official attributed the decline in part to increased use of Oklahoma's real-time PDMP.⁴⁴
- Washington State also saw a reduction in prescription drug related deaths, down 27% from 2008 to 2012. Department of Health officials attribute the decline to state initiatives to address prescription drug abuse and overprescribing, including the PDMP.⁴⁵
- A year after the inception of New York State's triplicate prescription program (its PDMP) in 1988, emergency department visits for drug overdoses involving benzodiazepines dropped by 48% in New York City and Buffalo.²⁴
- A national evaluation comparing states with and without PDMPs and focusing primarily on Schedule II controlled substances (e.g., opioids such as oxycodone) found that proactive PDMPs were associated with lower rates of treatment admissions for abuse of these drugs.³⁶
- A study comparing PDMP states with non-PDMP states found that PDMP states had decreases in admission rates to opioid addiction treatment programs.³⁷
- An analysis of poison center data from 2003 to mid-2009 found that in states with PDMPs, calls concerning intentional exposures to opioids (an indicator of opioid abuse or misuse) increased just 0.2% per quarter, while in states without PDMPs these calls increased 1.9%.⁴⁶

Reducing drug and medical costs related to inappropriate prescribing

- After New York State instituted its triplicate prescription program in 1988, the estimated savings due to the decline in benzodiazepine prescribing for New York's Medicaid program in 1989 and 1990 was \$27 million.²⁴
- A January 2013 report from the California's Workers' Compensation Institute estimates that the potential savings from enhanced opioid management controls made possible by California's PDMP

would be \$57.2 million, with a return on investment estimated at \$15.50 to \$1.⁴⁷ Given the potential for PDMP data to reduce the costs of workers' compensation claims and lost productivity attributable to prescription drug abuse, the American Insurance Association recommends that "It is essential for there to be broad [third party payer] access to PDMP data."⁴⁸

- WellPoint/Anthem Blue Cross Blue Shield of Virginia, a health insurance payer, estimated saving \$333,418 in drug and medical claims by restricting 100 clients to one pharmacy who had been receiving multiple narcotic prescriptions from 5 or more sources over a 90-day period. PDMP data are essential for the identification of such clients, since they track filled prescriptions from all sources, not just those prescribed by providers within a health insurance network.⁴⁹
- PDMP data identified 20 Medicaid clients appropriate for participation in Washington State's Medicaid "lock-in" program – the Patient Review and Coordination (PRC) program – which restricts at-risk Medicaid clients to one pharmacy and one prescriber for controlled substances. It is estimated that PRC participation results in a \$6,000 savings per year per client. Since clients stay in lock-in between two and five years, depending on their compliance, savings for these 20 clients were estimated at over \$400,000.⁵⁰
- According to a report by the PDMP Center of Excellence at Brandeis, participants at a meeting on PDMPs and third party payers concluded that PDMP data would be of great value to workers compensation programs and other medical insurers since it supplies a complete picture of controlled substance prescribing, permitting more effective detection of doctor shopping, prescription fraud, and over-prescribing.⁵¹

Reducing diversion and drug investigation times

- A study of diversion rates for prescription opioids in Florida found significant declines for several drugs, including oxycodone, methadone and morphine, after the implementation of pill mill laws and the state's prescription monitoring program.⁵²
- An evaluation of Virginia's PDMP found that investigation times were reduced by use of PDMP data.⁵³
- In 2002, the Government Accounting Office reported that the average times for investigations of doctor shoppers in Kentucky dropped from 156 days to 16 days after implementation of its PDMP. The same report found that average investigation times for doctor shoppers dropped markedly following the implementation of Nevada's PDMP, from 120 days to 20 days, reducing expenses related to investigations.⁵⁴
- A 2010 survey found that nearly three quarters (73%) of law enforcement officers who used Kentucky's PDMP (KASPER) strongly agreed that "KASPER is an excellent tool for obtaining evidence in the investigative process."⁵⁵
- A case study of a Kentucky drug diversion investigator provides an example of PDMP data serving as important aids in increasing the efficiency of investigations.⁵⁶

Monitoring compliance and abstinence

- Nevada's Pre-Criminal Intervention Program uses PDMP data to identify, enroll, and monitor individuals to help them stop doctor shopping, making law enforcement involvement unnecessary and saving taxpayers the cost of investigations, prosecutions and incarceration.⁵⁷

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- Drug courts in Kentucky use PDMP data to help monitor abstinence from prescription drugs, helping clients achieve sobriety and stability. This improves the court's ability to assure compliance and reduces costs related to drug diversion and abuse.⁵⁸

Assisting in substance abuse treatment and medical examiner practice

- Substance abuse treatment programs in Maine consult PDMP data when admitting patients into treatment (patient consent required) to help validate patient self-reports on use of medications.⁵⁹
- A report from the medical director of an opioid addiction treatment program indicates that PDMP data are an important clinical tool in monitoring use of controlled substances by patients addicted to opioids, keeping patients safe and increasing the effectiveness of treatment.⁶⁰ The Substance Abuse and Mental Health Services Administration has issued a policy advisory letter recommending use of PDMP data by opioid treatment programs.⁶¹
- Medical examiners in Virginia consult PDMP data as standard procedure in guiding autopsies and in conducting forensic investigations.⁶²

Assisting in drug abuse prevention and surveillance efforts

- Project Lazarus, a comprehensive overdose prevention program in North Carolina, makes use of PDMP data in motivating and measuring community drug abuse prevention efforts, helping to reduce overdose deaths.⁶³
- The Prescription Behavior Surveillance System (PBSS) collects and analyzes de-identified PDMP data from multiple states to track trends in prescribing, doctor shopping and problematic prescribing. Analyzes can identify longitudinal and geographic patterns in prescription behavior, as well as the characteristics and demographics of those most at risk for prescription drug abuse. Such surveillance can help state and community drug abuse prevention organizations target their interventions for maximum impact.⁶⁴

Physicians express support for PDMPs⁶⁵

- "This has been a huge benefit for our clinic and managing patients' narcotic use. It has improved our clinic and our time required for calling all the pharmacies in the area to find out if our patients are being compliant with medications and weed out those who are not, to provide for those patients who really need our care." – Mississippi Pain Management Specialist
- "We would like to take the time to express our gratitude for all your efforts in the CURES program. This program is a wonderful resource tool in tracking our controlled substance prescriptions and aiding in prevention of substance abuse." – California Pain Management Specialist.
- "As an emergency physician, I have found the OARRS program [Ohio's PDMP] extremely useful. I am shocked daily by the number of prescriptions and prescribers that some of my patients possess." - Ohio physician
- "I appreciate this website greatly!!! As a hospitalist it makes my life much easier to verify drug history and doctor shoppers." – Ohio physician
- "Instant access to controlled substance history is critical to safe management of patients." – Massachusetts physician⁶⁶

Investigators find PDMPs an invaluable resource⁶⁷

- “As far as enforcement of the Controlled Substance Act, the Prescription Monitoring Program is one of the best assets we have ever had. The countless hours saved by the agents being able to pull the profile compared to the way agents used to have to go to each pharmacy to get a profile have saved the state a large amount of money in salaries and vehicle expense.” - Agent, Mississippi Bureau of Narcotics
- “This database is like cell phones and e-mail - what the heck did we do without it?” - Pharmacy Diversion Investigator, Ohio Narcotics Agency
- "... the monitoring system in [Mississippi] has been great. It has helped me identify alleged over prescribing registrants, possible doctor shopping patients, as well as possibly impaired practitioners writing prescriptions for themselves.” - DEA Diversion Investigator
- “After receiving a complaint, I can request a report and know in just a few minutes if there is a case to investigate or not... I cannot say enough about KASPER and how valuable it is in my day to day investigations. If you, as an investigator, are not utilizing KASPER, you are limiting your resources and missing valuable information.” – KY State police officer⁶⁸

Note: For inquiries concerning this report, please contact the PDMP Center of Excellence at <http://www.pdmpexcellence.org> or call 781-736-3909.

Endnotes

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