

Prescription Drug Monitoring Program Center of Excellence at Brandeis

## COE Briefing

# PDMP prescriber use mandates: characteristics, current status, and outcomes in selected states

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\*The original version of this briefing, posted in November 2013 and focusing on data and experience in Kentucky, can be found at

<http://www.pdmpexcellence.org/sites/all/pdfs/COE%20briefing%20on%20mandates%2011%2014%2013.pdf>.

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### **PDMP Prescriber Use Mandates: Characteristics, Current Status, and Outcomes in Selected States**

Now in its third revision since November 2013, this briefing describes the recent history and current status of prescriber mandates, as well as outcomes in selected states.<sup>1</sup> It also discusses policy and implementation issues for states considering mandates.

#### **Background**

Full utilization of prescription drug monitoring programs (PDMPs) can help maximize their potential in addressing prescription drug misuse and in improving patient care. In many states with operational PDMPs, enrollment in the PDMP is discretionary, as is viewing a patient's prescription history when prescribing controlled substances. Recruitment campaigns to induce health care professionals to enroll in and use the system can be resource-intensive and often fail to produce high rates of participation. Prescriber registration in a PDMP, although mandated by some states, does not guarantee the prescriber will actually make use of PDMP data in clinical practice. An option to increase prescriber utilization, gaining acceptance, is a statutory mandate by a state for prescribers to query the PDMP under certain circumstances. As of this report, 30 states and the territory of Guam have adopted a prescriber use mandate, although some apply to only certain classes of practitioners (e.g., clinicians in opioid treatment programs) and/or prescriptions (e.g., opioids).<sup>2</sup> Experience in states (described below) indicates that sufficiently strong mandates can quickly increase utilization of PDMPs, with subsequent decreases in patient risk measures and prescribing of commonly misused controlled substances, as well as reduced morbidity and mortality related to prescription drug misuse. Mandates are consequently seen as among the most promising practices states can adopt in efforts to promote consistent use of PDMPs by prescribers and to realize the benefits associated with such use.

#### **Recent history of prescriber use mandates**

Prior to 2012, just two states, Arizona (2007) and Utah (2010), required that prescribers register with the PDMP, with utilization at the prescriber's discretion. As of July 2013, 11 more states had adopted legislation mandating registration of prescribers and in some cases dispensers,<sup>3</sup> and by the end of 2015, a total of 23 states had done so.<sup>4</sup>

Mandates for prescribers to actually query the PDMP have likewise proliferated, with an accelerating pace of adoption. The more recent mandates (2012-2016) tend to have wider and more obligatory conditions of application than those adopted earlier. In 2009, Nevada was the first state to legislate required use, triggered by a subjective criterion: if "the practitioner has a reasonable belief that the patient may be seeking the controlled substance, in whole or in part, for any reason other than the treatment of an existing medical condition." In 2010, Oklahoma adopted a limited, single substance mandate, requiring that a practitioner check the PDMP only when prescribing, administering or dispensing methadone. In 2012, Kentucky was the first state to adopt a more comprehensive mandate with objective criteria specifying when all prescribers must view a patient's prescription history. As of May 2016, 30 states had adopted some version of a prescriber use mandate.<sup>5</sup> Both Nevada and Oklahoma expanded their mandates in 2015.

### Mandate requirements and current adoption

Although no two states' prescriber mandates are exactly alike, mandates can be classified according to the conditions under which prescribers are required to view a patient's prescription history.<sup>6,7</sup> The most comprehensive mandates currently in place require that all prescribers query the PDMP when initially prescribing any opioid or benzodiazepines, and subsequent checks of the database must be made at three month intervals should prescribing continue. States with mandates meeting these criteria include Kentucky (2012), New York (2013), Ohio (2013, 2015),<sup>8</sup> and Connecticut (2015). Maine will have such a mandate effective in July 2016 as will Maryland, effective July 2018.

Mandates in the next class are less comprehensive in that initial checks may not be required for all opioids and benzodiazepines, and subsequent checks may be required at intervals greater than three months. States with such mandates include Tennessee (2013), West Virginia (2013), Oklahoma (2015), New Jersey (2015), New Mexico (2012-2016), Rhode Island (2015), Vermont (2014), and Wisconsin (2016).

The next class of mandates may have categorical requirements but do not meet one or more criteria characteristic of the first and second groups. Pennsylvania (2015), Nevada (2015) and Massachusetts (2016), for example, do not require a follow-up query. The Arkansas and Louisiana mandates require querying the PDMP for non-cancer chronic pain prescriptions only, while Virginia's mandate requires checking the database for opioid prescriptions anticipated to continue for more than 14 days. Arkansas is unique among states with mandates in that it also requires prescribers found by a licensing board to be in violation of a law related to controlled substances to enroll in the PDMP and access patient information before writing an opioid prescription.

States with mandates based on subjective criteria – e.g., a prescriber's judgment of possible inappropriate use – currently include Delaware, North Dakota, and Utah.<sup>i</sup> Finally, some states mandate that only prescribers in opioid treatment programs, workers' compensation programs, or pain clinics must query the PDMP. States with such mandates include Arizona, Colorado, Georgia, Indiana, Minnesota, Mississippi, North Carolina, and Washington.

As of this report (May 2016), Alaska had passed prescriber mandate legislation awaiting the governor's signature, and California and Michigan were both considering such legislation. Given the rapid pace of adoption thus far, it seems likely that prescriber mandates will be enacted by additional states.

### Implementation and Impact in Selected States

Recent experience in states with comprehensive mandates, such as Kentucky, Tennessee, New York and Ohio (described below), indicates that mandates can rapidly increase utilization of PDMPs.<sup>9</sup> As rates of PDMP participation have increased in these states, measures of multiple provider episodes (MPEs, an indicator of possible inappropriate use of controlled substances) and prescribing of certain drugs have declined. This suggests that PDMP utilization helps to promote medically warranted prescribing and dispensing, and can assist in detecting possible controlled substance misuse and diversion.

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<sup>i</sup> In 2016, the North Dakota legislature passed a bill requiring licensing boards to enact regulations requiring licensees to check the PDMP.

The mandates in these states necessitated the expansion and enhancement of their PDMPs in order to meet the increased demand for patient reports. Dates for required use of the PDMP set by mandate legislation meant that the agencies in charge of PDMPs were, in some cases, given relatively short deadlines to complete their work. This in turn required increased staff and information technology (IT) resources for planning and implementing the enhancements, including automated enrollment systems. It also meant long hours for PDMP staff in some cases.

Critical for the adoption of these mandates were coordinated campaigns by stakeholders to persuade medical professionals that their required use of the PDMP was in the best interests of patients and providers. Advocates for the mandates cited accumulating evidence that PDMPs can help improve clinical decision-making without unduly burdening medical workflow.<sup>10</sup> Nevertheless, some legislative requirements to use the PDMP were renegotiated in response to provider concerns.

### Kentucky

Kentucky passed legislation in April 2012 (HB1) requiring enrollment and use of its PDMP, KASPER (Kentucky All Schedule Prescription Electronic Reporting) starting on July 20 of that year.<sup>11</sup> The mandate required that prescribers query the PDMP prior to prescribing Schedule II and hydrocodone in Schedule III for all patients and at least every 90 days thereafter, with some limited exceptions. Regulations by professional licensing boards later extended the mandate to all Schedule II, III and IV controlled substances. After passage of HB1, enrollment in KASPER increased rapidly, from 7,911 registered prescriber and pharmacist users in April 2012 to 25,409 by the end of July 2013, over a three-fold increase. The utilization of the system increased commensurately: the total number of KASPER prescription history reports requested by users rose from 811,000 in 2011 to 2,691,000 in 2012, an increase of over 230 percent, then rose to 4,586,500 reports in 2013, up 70 percent. Overall dispensing of controlled substances declined after the mandate, from 7.39 million doses in the one year period from August 2011 to July of 2012, to 6.76 million doses in August 2012 to July of 2013, a drop of 8.5 percent. Doses dispensed declined for hydrocodone (10.3%), oxycodone (11.6%), oxymorphone (35%) and alprazolam (13.4%) but increased for methylphenidate (7.5%) and amphetamine (9.2%). Prescriptions for buprenorphine, a drug used in treating opioid dependence (and sometimes for treating pain), increased from 56,686 in the 3<sup>rd</sup> quarter of 2011 to 107,466 in the 2<sup>nd</sup> quarter of 2013, up nearly 90 percent.

An evaluation of HB1 carried out by the University of Kentucky found that multiple provider episodes (MPEs), defined as individuals receiving prescriptions from four or more prescribers dispensed at four or more pharmacies within three months, dropped by over half after the mandate went into effect.<sup>12</sup> Declines were also observed for hospitalizations, overdoses, and deaths attributable to prescription opioids. Since HB1 also included other provisions to address prescription drug misuse and diversion, such as regulation of pain clinics, these outcomes cannot be solely attributed to increased prescriber use of KASPER.

In response to HB1, Kentucky's Cabinet for Health and Family Services (CHFS) acted quickly to institute a paperless online registration process based upon prescriber and pharmacist licensee files provided by the appropriate licensure boards. To handle the increased workload, CHFS increased the Help Desk from one to four full time staff, increased KASPER administration from two to three full time staff, and utilized four temporary staff members to process registrations and answer administrative emails and phone calls. Legislation enabling the mandate provided for funding from the Office of the Attorney General to support KASPER operations and enhancement for two fiscal years.

A vocal minority of medical professionals in Kentucky originally opposed the mandate. After its adoption, some practitioners continued to express concerns to legislators and licensing boards about

the enrollment and utilization requirements, as well as about additional controlled substance prescribing standards implemented through licensing board regulations. Modifications to the legislation were made in response to these concerns, but mandatory registration and use remain as originally adopted. To facilitate compliance with the mandate and increase familiarity with KASPER, Kentucky conducted a prescriber education campaign, including a web-based training module on the use and benefits of PDMP data.<sup>13</sup> The University of Kentucky evaluation of HB1, which included a survey of practitioners, found that most respondents felt that its implementation had not negatively impacted their health care practice. In addition, Kentucky received a SAMHSA PDMP interoperability grant in 2013 to integrate PDMP reports into EHR systems in an effort to streamline provider access.

### Tennessee

Experience in Tennessee parallels that of Kentucky: a rapid increase in enrollment and use of the PDMP following adoption of the mandate, and a subsequent drop in opioid prescribing and those meeting a threshold for MPEs. The Tennessee legislation required that providers enroll in the Controlled Substance Monitoring Database (CSMD, Tennessee's PDMP) by January 1, 2013, and required that prescribers check the database starting April 1 of that year. (Dispensers are not required to check it, but are instructed to do so if they have reasonable suspicion that a patient is attempting to obtain medically unnecessary controlled substances). Enrollment in CSMD increased from 15,323 providers in 2011 to 34,802 by the end of 2013, up over 125 percent; as of 2015 enrollment had reached 42,835. The number of prescription history reports requested rose sharply as a result, from an average of 123,911 reports per month in 2011 to an average of 374,984 reports per month for 2013, then 537,092 per month in 2015. The number of opioid prescriptions reported to the PDMP fell from 8,778,561 in 2012 to 8,580,375 in 2013, then to 8,084,981 in 2015, down nearly eight percent from 2012, while the total MME (morphine milligram equivalents) of opioids dispensed dropped over eight percent during the same period. The number of individuals meeting a "5x5x3" threshold for MPEs (being prescribed to by five or more prescribers and filling prescriptions at five or more pharmacies in a three month period) declined from 9,230 in 2011 to 4,602 in 2015, down 50 percent.<sup>14</sup>

As described by the PDMP administrator, implementation of the Tennessee mandate required a significant increase in staff, including a project manager and two additional administrative support positions. New servers and load balancers were added to handle the anticipated increase in demand on the system. Considerable effort went into designing an online automated enrollment process, without which it would have been impossible to add so many users so quickly. However, many enrollments still had to be processed manually. Overall, the project stayed on schedule, although having automated systems in place earlier would have reduced the workload on staff.

An advisory committee of major stakeholders coordinated the campaign for the mandate, which focused on the role of the PDMP in promoting safe prescribing and dispensing. Many providers were initially opposed, but PDMP staff eventually won their support by making a data-driven case for the mandate, citing rising prescription drug overdoses and deaths. Some modifications to the legislation were made in response to provider concerns about workflow, including the addition of extender (delegate) accounts which allow both licensed and unlicensed employees of a medical practice to access the database, with the provider(s) assuming liability for any misuse of data.

### New York

New York implemented its new PDMP, pursuant to the I-STOP legislation (Internet System for Tracking Over-Prescribing), on June 12, 2013, then mandated use of the system by prescribers on August 27. The mandate requires prescribers to consult the PDMP prior to issuing all Schedule II, III or IV prescriptions, with some exceptions, including for prescriptions of five days supply or less and those for hospice care.

Prior to implementation of the new Prescription Monitoring Program Registry (“PMP Registry”), New York’s earlier online PDMP had only 5,087 users who requested 465,639 reports over three and a half years, averaging approximately 11,000 reports per month. As of February 17, 2014, six months after the mandate began, the number of active users reached 67,779. Between August 27, 2013 and February 17, 2014, these users requested over 7.3 million reports on over 3.5 million unique patients. This averages well over 42,300 reports requested per *day*, compared to the 11,000 per *month* requested prior to I-STOP implementation. As in Kentucky and Tennessee, the mandate seems to have driven a rapid increase in both registration and utilization of the PDMP.

Comparing data from the fourth quarter of 2012 to the fourth quarter of 2013 (the first full quarter following the mandate), there were notable differences in prescribing and dispensing behavior. The number of prescriptions for all opioids decreased by 9.5 percent, while the number of individuals with a prescription for an opioid decreased by 9.5 percent as well. The largest decreases in prescriptions were seen in hydrocodone (-20.4%)<sup>15</sup>, codeine 5 (-33.2%), and codeine 3 (-13.2%). There were slight increases in the number of prescriptions for oxycodone (0.72%) and individuals with a oxycodone prescription (1.55%), but a decrease in the total number of practitioners issuing these prescriptions (-8.5%) and total doses of oxycodone dispensed (-2.5%). As in Kentucky, there was a marked increase in the number of buprenorphine prescriptions (14.6%) and patients being prescribed this drug (12.8%). The number of individuals meeting a 5x5x3 threshold for MPEs decreased by 74.8 percent from the fourth quarter of 2012 to the fourth quarter of 2013. By the fourth quarter of 2014, individuals involved in multiple prescriber episodes had decreased by 82 percent.<sup>16</sup>

Because the New York PDMP, unlike many, has stable funding via fees collected from state health insurers, resources were available to make the significant enhancements required by the I-STOP law. Additional staff hired for the project included five programmers and a pharmacy consultant with IT expertise, along with two Medicaid staff who were transferred to work full time on I-STOP. The project’s programming took seven and a half months; costs for staff time and infrastructure upgrades to New York’s custom-built PDMP totaled approximately \$1 million.

Potential users of the PDMP were advised of the upcoming mandate via notifications sent through mass mail and email communications, as well as information that accompanied registrations and shipments of New York’s Official Prescription Form pads (provided at no charge to prescribers). Despite prior opposition and concerns, many professional societies partnered with PDMP staff to help educate their members about I-STOP’s requirements, helping to ensure higher compliance rates. PDMP staff also gave numerous presentations around the state to medical professionals, pharmacy societies and other interested stakeholders, explaining the purpose and benefits of PDMP utilization. The presentations were particularly effective with the medical community when the PDMP was described as a tool to help ensure safe prescribing and improve healthcare, and not solely to detect prescription drug diversion. These presentations included current research, reports and surveys of PDMP users<sup>17</sup> suggesting that prescription monitoring data can play a key role in clinical decision-making.

### Ohio

Ohio has taken several recent steps to address the prescription drug epidemic, including passing legislation in October 2011 requiring licensing boards to create regulations governing prescriber and dispenser use of Ohio’s PDMP, the Ohio Automated Rx Reporting System (OARRS). (The legislation also included measures targeting pill mills and established a licensing system for pain management clinics and a drug take-back program.) In response, the medical, dental, nursing, optometry and other health care professional boards promulgated rules requiring that if a prescriber has reason to believe that treatment with controlled substances in Schedules II-V will extend beyond 12 weeks, she must request

and review a prescription history report on the patient at the beginning of treatment, then query OARRS on that patient at least once annually thereafter.

After rules were adopted the utilization of OARRS increased dramatically, from 911,000 reports requested in 2010, to 1.8 million in 2011, 5.4 million in 2012, 7.3 million in 2013, and over 2 million in the first quarter of 2014.<sup>18</sup> During this period the rate of those meeting the 5x5x3 MPE threshold declined from 25 per 100,000 residents in the first quarter of 2010 to just over 10 per 100,000 in the last quarter of 2013.<sup>19</sup> From 2012 to 2013, Ohio also experienced a drop in the number of doses and prescriptions of its two most prescribed drugs, hydrocodone and oxycodone: hydrocodone doses dropped by 3.5 percent and prescriptions by 11.1 percent; oxycodone doses dropped 1.7 percent, prescriptions 8.7 percent. The morphine equivalent dose (MED) per opioid prescription also fell approximately 12 percent from 2010 (58) to 2013 (51).<sup>9</sup>

It should be noted that other actions taken in Ohio besides the rules mandating PDMP use may have played a role in these outcomes. In the third quarter of 2012, guidelines were published and adopted on the prescribing of opioids in emergency departments, and in 2013 guidelines were adopted on long-term opioid prescribing, both of which may have helped reduce opioid prescribing.

In June of 2014, Ohio passed legislation adding further requirements on using OARRS, including a requirement for those prescribing opioids or benzodiazepines, as well as all pharmacists and pharmacy interns, to have an OARRS account when renewing their license. In addition, prescribers must request an OARRS report on a patient prior to initially prescribing or personally furnishing an opioid or benzodiazepine and then again every 90 days as long as treatment continues, with a few exceptions, e.g., if the prescription is for seven days or less, for treatment of cancer, or for use by hospice patients. Following implementation of these requirements in 2015, OARRS utilization increased again, from 1.2 million queries in April to 1.4 million queries in September, a 17 percent increase.<sup>20</sup>

The bill originally introduced to mandate use of OARRS (HB 341) faced stiff opposition from many in the prescriber community. To win their support, the Board of Pharmacy worked with the bill's sponsor to narrow the classes of prescriptions requiring use of OARRS to opioid analgesics and benzodiazepines, the drugs most implicated in Ohio's prescription drug overdose deaths according to data from the Department of Health. In addition, the sponsor and the Board recommended exceptions for post-surgical pain prescriptions and prescriptions not exceeding a seven day supply. These changes helped to win backing from significant medical constituencies, including pediatricians, emergency department physicians, dentists and the hospital community. The current version of the bill therefore reflects a data-driven compromise between all parties involved, one which had the intended effect of rapidly expanding use of OARRS.

### Conclusions

Recent experience in Kentucky, Tennessee, New York and Ohio indicates that mandating provider use of PDMPs can result in a rapid increase in enrollment and requests for prescription information. It seems likely that these increases would not have occurred but for the mandates. Indeed, performance measure data reported by states participating in the Bureau of Justice Assistance Harold Rogers PDMP Grant Program suggest that, absent a mandate, prescriber enrollment in the PDMP is a relatively slow process, with enrollment still increasing 4 to 5 years after online access is made available, and reaching, after that time, roughly 50% of prescribers who write at least one prescription per month.<sup>21</sup>

Increased utilization in all four states was associated with declines in opioid prescribing and measures of MPEs. These effects are consistent with more discriminating, medically-indicated prescribing and better detection of possible doctor shoppers and those in need of clinical interventions to address addiction

and pain management problems. Such outcomes can in turn help prevent or reduce costs and harms related to prescription drug misuse, such as unnecessary prescriptions, treatment of drug misuse-related health problems, lost work and productivity, overdoses, hospital admissions and deaths. Declines in prescription drug-related morbidity and mortality, as seen in Kentucky, or slower increases in comparison with states without mandates, suggest that requiring use of PDMPs, sometimes in combination with other prevention efforts, can help reduce misuse of prescription drugs.<sup>22</sup>

Not all states will be able to pursue a resource-intensive, rapid implementation approach to required PDMP participation such as taken by Kentucky, Tennessee and New York, nor will they need to. States considering mandates can take a more gradual approach that eventually results in full participation. Such is the case in Massachusetts, which until recently was conducting a phased enrollment in which controlled substance registration renewals, required every three years, trigger a prescriber's enrollment in the PDMP (the state has since implemented expedited enrollment in response to a declared opioid overdose public health emergency). Since states will take different approaches to implementing a mandate, involving a range of policies and procedures, the costs and relative efficiencies of approaches can be compared.

The adoption of a mandate necessarily places additional demands on a PDMP coming from greater utilization. This presents an opportunity to solicit increased financial and staff support. It also requires enhancements in operations and infrastructure to enable increased capacity and efficiency. Efforts to facilitate provider enrollment and easy access to PDMP data, for instance by means of delegate accounts<sup>23</sup>, will help ensure a mandate's acceptance and help make provider use of PDMP data a standard of care.

Lastly, the experience of states described here suggests that to generate support for a mandate, PDMP advocates should collaborate with the medical community and other stakeholders to build an evidence-based case for its benefits. States considering mandates can learn from the early adopters about what works in passing legislation and implementing its provisions.

As more states adopt mandates, which seems likely given the accelerating trend of adoption since 2012, more data will become available to determine if, as now seems likely, they are a best practice for promoting PDMP utilization. Further experience will no doubt increase the range of tested options for states considering mandates. It will also be important to monitor for any unintended consequences or concerns related to required use of PDMPs, although no major concerns have surfaced thus far. Future COE reports will continue to track developments in these and other efforts to increase PDMP utilization by providers and other end users.

### Acknowledgements

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### Endnotes



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- <sup>1</sup> The original version of this briefing focused on Kentucky only, see <http://www.pdmpexcellence.org/sites/all/pdfs/COE%20briefing%20on%20mandates%2011%2014%2013.pdf>.
- <sup>2</sup> PDMP Training and Technical Assistance Center, “Mandatory Query by Prescribers and Dispensers,” [http://www.pdmpassist.org/pdf/Mandatory\\_Query.pdf](http://www.pdmpassist.org/pdf/Mandatory_Query.pdf), and “Criteria for Mandatory Enrollment or Query of the PDMP,” [http://www.pdmpassist.org/pdf/Mandatory\\_conditions.pdf](http://www.pdmpassist.org/pdf/Mandatory_conditions.pdf).
- <sup>3</sup> Data from the Prescription Drug Monitoring Project of the National Alliance for Model State Drug Laws (NAMSDL), <http://www.namsdl.org/prescription-monitoring-programs.cfm>, reported in July, 2013.
- <sup>4</sup> PDMP Training and Technical Assistance Center, “PDMP Mandatory Enrollment of Prescribers and Dispensers,” [http://www.pdmpassist.org/pdf/Mandatory\\_Enrollment.pdf](http://www.pdmpassist.org/pdf/Mandatory_Enrollment.pdf).
- <sup>5</sup> PDMP Training and Technical Assistance Center, “Mandatory Query by Prescribers and Dispensers,” [http://www.pdmpassist.org/pdf/Mandatory\\_Query.pdf](http://www.pdmpassist.org/pdf/Mandatory_Query.pdf).
- <sup>6</sup> For state’s laws and regulations on mandates, see NAMSDL webpage at <http://www.namsdl.org/library/99D9A3E8-C13E-3AF4-8746F4333CA2A421/>.
- <sup>7</sup> The Centers for Disease Control has rated states’ prescriber mandates on their comprehensiveness using criteria described in this section, see <http://www.cdc.gov/psr/>.
- <sup>8</sup> Ohio passed two separate laws mandating prescriber use of the PDMP, the second more comprehensive; see case study on Ohio in this report.
- <sup>9</sup> These states were included in this report because data on utilization and outcomes sensitive to PDMP utilization were available. Data from other states, as it becomes available, may not replicate the patterns described here.
- <sup>10</sup> For a review of evidence, see the COE Briefing on PDMP Effectiveness, p. 4 at <http://www.pdmpexcellence.org/sites/all/pdfs/Briefing%20on%20PDMP%20Effectiveness%203rd%20revision.pdf>.
- <sup>11</sup> The legislation can be viewed at <http://www.namsdl.org/library/99D9A3E8-C13E-3AF4-8746F4333CA2A421/>, p. 16-44.
- <sup>12</sup> Freeman, Kentucky House Bill 1 Impact Evaluation. <http://www.chfs.ky.gov/NR/rdonlyres/8D6EBE65-D16A-448E-80FF-30BED11EBDEA/0/KentuckyHB1ImpactStudyReport03262015.pdf>.
- <sup>13</sup> For further details on the implementation of the Kentucky mandate, see the first version of this briefing posted at <http://www.pdmpexcellence.org/sites/all/pdfs/COE%20briefing%20on%20mandates%2011%2014%2013.pdf>.
- <sup>14</sup> Data in this section are from Tennessee’s Controlled Substance Monitoring Database 2016 annual report, [http://www.tn.gov/assets/entities/health/attachments/CSMD\\_AnnualReport\\_2016.pdf](http://www.tn.gov/assets/entities/health/attachments/CSMD_AnnualReport_2016.pdf).
- <sup>15</sup> Some of the decrease in hydrocodone prescribing is likely due to New York’s reclassification of hydrocodone as a Schedule II drug, effective February of 2013.
- <sup>16</sup> Joshua Vinciguerra, Director Bureau of Narcotic Enforcement, NY State Department of Health. Presentation to US Department of Health and Human Services’ meeting Advancing Policy and Practice: A 50 State Convening to Prevent Opioid Overdose and Addiction, 18 September 2015.
- <sup>17</sup> Some of these are described in the COE Briefing on PDMP Effectiveness at <http://www.pdmpexcellence.org/sites/all/pdfs/Briefing%20on%20PDMP%20Effectiveness%203rd%20revision.pdf>.
- <sup>18</sup> See OARRS Statistics - 2013 Data (updated 4/7/2014) at <https://www.ohiopmp.gov/portal/docs.aspx>.
- <sup>19</sup> See Kreiner, P, “The Prescription Behavior Surveillance System: Applications of De-Identified PDMP Data in Public Health Surveillance slide 9, at [http://pdmpexcellence.org/sites/all/pdfs/Kreiner\\_Expert%20Panel%20webinar\\_June%202014%20v2.pdf](http://pdmpexcellence.org/sites/all/pdfs/Kreiner_Expert%20Panel%20webinar_June%202014%20v2.pdf).

<sup>20</sup> OARRS Performance & Usage, Reports Generated By Month. Available at <https://www.ohiopmp.gov/Portal/perf.aspx>.

<sup>21</sup> See the COE document “Bureau of Justice Assistance Prescription Drug Monitoring Program Performance Measures Report: January 2009 through June 2012,” pp. 14-16, at [http://www.pdmpexcellence.org/sites/all/pdfs/BJA%20PDMP%20Performance%20Measures%20Report%20Jan%202009%20to%20June%202012%20Final\\_with%20feedback.pdf](http://www.pdmpexcellence.org/sites/all/pdfs/BJA%20PDMP%20Performance%20Measures%20Report%20Jan%202009%20to%20June%202012%20Final_with%20feedback.pdf).

<sup>22</sup> For other examples of how health outcomes might be improving as a result of PDMP utilization, see the COE Briefing on PDMP Effectiveness, 3<sup>rd</sup> revision, at <http://www.pdmpexcellence.org/sites/all/pdfs/Briefing%20on%20PDMP%20Effectiveness%203rd%20revision.pdf>, page 7.

<sup>23</sup> See the COE briefing on delegate accounts at <http://www.pdmpexcellence.org/sites/all/pdfs/COE%20Briefing%20on%20Delegate%20Account%20Systems.pdf>.