



## Pennsylvania Prescription Drug Monitoring Program (PDMP) System User and Stakeholder Training

# Why Using the PDMP is Important for Achieving Optimal Health for Pennsylvania Residents

MODULE 1

GUIDE DOCUMENT



# Pennsylvania Prescription Drug Monitoring Program (PDMP) System User and Stakeholder Training

## Learning Objectives for Modules 1-7

### **Module 1: Why Using the PDMP is Important for Achieving Optimal Health for Pennsylvania Citizens**

1. The status of substance use disorder in general, opioid use disorder and overdoses nationally and in Pennsylvania;
2. Common misconceptions about substance use disorder and opioid use disorder treatment and recovery;
3. Costs associated with prescription drug and heroin-associated opioid use disorder and overdose; and
4. How pervasive prescriber and pharmacist PDMP use can reduce population opioid use disorder and overdose.

### **Module 2: What is a PDMP, How to Use the PDMP to Make Clinical Decisions, How to Integrate the PDMP into the Clinical Workflow, and How to Access Pennsylvania's PDMP**

1. Detail Pennsylvania's requirements and regulations regarding PDMP use;
2. Explore options and actions Pennsylvania prescribers and pharmacists can take to integrate the PDMP into clinical workflows; and
3. Discuss how to use the PDMP system to make clinical decisions.

### **Module 3: Using the PDMP to Optimize Pain Management**

1. Learn how to use the PDMP to address pain management for various patient populations and pain types;
2. Understand the basic nature of pain for different patient populations and how to manage their pain using the PDMP as a clinical tool; and
3. Discuss different ways of treating patient pain that do not involve the immediate use of opioids.

### **Module 4: Opioid Prescribing Guide**

1. Provide guidelines to inform all healthcare providers when prescribing opioids in the acute phase of pain;
2. Instruct healthcare providers on how to prescribe opioids in the chronic phase of pain, which includes information on how to initiate or continue opioid therapy, select the correct dose and/or discontinue opioids;
3. Instruct healthcare providers on how to assess risks and address harms associated with opioid use;
4. Instruct healthcare providers on the legal responsibilities related to prescribing opioids; and
5. Instruct healthcare providers on how they may direct patients to dispose of unused medications.

### **Module 5: Referral to Treatment for Substance Use Disorder Related to Opioid Use**

1. Define "warm handoffs" and how they can best occur;
2. Provide a schema for how any healthcare provider can implement "warm handoffs" in any clinical setting;
3. Demonstrate how primary care practices can conduct "warm handoffs" by preparing, using validated screening tools and using patient-centered communication with patients;
4. Demonstrate how healthcare providers can determine the best type of treatment for their patients;
5. Present information on patient confidentiality that providers should be aware of when working with patients with substance use disorders and performing "warm handoffs"; and
6. Present relevant Pennsylvania links for treatment and other resources.

### **Module 6: Approaches to Addressing Substance Use Disorder with Patients Identified by the PDMP**

1. Learn how to integrate the PDMP with other screening tools to help identify those who may require substance use disorder treatment or increased monitoring;
2. Define Screening, Brief Intervention and Referral to Treatment (SBIRT), its main goals, and its main components;
3. Learn how to screen a patient for a potential substance use disorder, conduct a brief intervention and refer a patient to treatment;
4. Learn how to discuss a substance use disorder with a patient and handle patient resistance; and
5. Learn how to incorporate SBIRT into clinical practice.

### **Module 7: Effective Opioid Tapering Practices**

1. Discuss how to use the PDMP to determine if a provider should consider tapering his/her patient;
2. Discuss several indicators that prescribers can look for when considering tapering opioids;
3. Inform prescribers on how to discuss tapering with patients using patient-centered techniques;
4. Present a general opioid tapering protocol and how to adapt this protocol to the needs of any patient; and
5. Present information on how to manage withdrawal and how to use tools to measure withdrawal symptoms in patients.

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## Introduction

The United States currently faces a public health crisis from opioid use disorder and related overdoses.<sup>1,2</sup> In fact, Pennsylvania has one of the highest rates of overdose in the nation, with 36.1 (4,415) deaths occurring per 100,000 people in 2018.<sup>3</sup>

Moreover, the increased prevalence of opioid use disorder has become one of the most significant public health crises the commonwealth has ever experienced. This crisis is associated with rising overdose rates, deadly social consequences, increased health-related risks and high economic and societal costs. In fact, opioid misuse costs each Pennsylvanian approximately \$68, on average.<sup>4</sup> Examples of areas in which societal costs have been elevated due to the high rates of opioid use disorder include the criminal justice system, child welfare system, substance use disorder treatment, other areas of healthcare, emergency medical services and lost productivity costs.<sup>5-7</sup>

One of the reasons the societal costs and economic burden related to opioid use disorder and overdose is so high is that opioid addiction is associated with other health care risks. As just one example, rates of hepatitis C diagnoses are higher among individuals with opioid use disorder. One study showed that from 2006–2016, admissions for opioid dependence in the Appalachia region increased 21.1%.<sup>8</sup> At the same time, 1,377 new hepatitis C diagnoses were recorded.<sup>8</sup> Another study examining hepatitis C prevalence and opioid use during buprenorphine treatment indicated that 76% of people in treatment also had hepatitis C diagnoses.<sup>9</sup>

Until recently, overdose deaths were more commonly associated with prescription opioid use rather than with heroin use. Presently, synthetic opioids such as fentanyl and fentanyl-related substances (typically present in street heroin) have become a more prevalent cause of opioid-associated deaths, especially in Pennsylvania. Analyses of 2018 drug-related overdose deaths indicated that 70% of deaths resulted from fentanyl, while 35% of deaths resulted from heroin, 33% of deaths resulted from cocaine, and 28% of deaths resulted from benzodiazepines and 18% of deaths results from prescription opioids.<sup>10</sup> The association between prescription opioids and heroin is complex, but individuals who have developed opioid dependence to heroin frequently cite early access to prescription opioids and illicit prescription opioid use as their first exposure leading to future heroin use.<sup>11</sup>

Because of the role of prescription opioids in opioid use

disorder and overdose, it is important that prevention, intervention and treatment efforts address prescription opioids at their source — with prescribers and pharmacists/dispensers. To combat the misuse of opioids, the Pennsylvania Department of Health has developed a series of Opioid Prescribing Guidelines in addition to developing a Prescription Drug Monitoring Program (PDMP). The Pennsylvania Department of Health administers this program and, in January 2017, registration for this program became mandatory for all prescribers and pharmacists of Schedule II-V substances.

**In this module, prescribers and pharmacists will learn why the use of the PDMP is important to improving Pennsylvania's population health. This module will include information on:**

1. The status of substance use disorder in general, opioid use disorder and overdoses nationally and in Pennsylvania;
2. Common misconceptions about substance use disorder and opioid use disorder treatment and recovery;
3. Costs associated with prescription drug and heroin-associated opioid use disorder and overdose; and
4. How pervasive prescriber and pharmacist PDMP use can reduce population opioid use disorder and overdose.

# What Do We Know About Addiction, Opioid Use Disorder, and Overdose Nationally and in Pennsylvania?

Below are statistics about substance use disorder, opioid use disorder and overdoses nationally and specifically in Pennsylvania.

## National Statistics

### Substance use disorder rates are high in our nation.

- 20.3 million individuals in the United States (12 years of age and older) had a substance use disorder in 2018. An estimated 2 million people had an opioid use disorder which includes 1.7 million people with a prescription pain reliever use disorder and 526,000 people with a heroin use disorder.<sup>12</sup>
- Prescription pain reliever misuse was the second most common form of illicit drug use in the United States in 2018, with 3.6% of the population misusing pain relievers.<sup>12</sup>

### Overdoses are occurring at alarmingly high rates.

- Overdose deaths have been increasing since 1999; however, in 2018, the United States saw a 4.1% decrease in overdose deaths from the previous year (67,367 and 70,237, respectfully).<sup>13</sup>
- In 2018, 69.5% (46,802) overdose deaths involved an opioid. Additionally, the rate of drug overdose deaths involving synthetic opioids other than methadone (including fentanyl and tramadol) increased by 10% in 2018.<sup>13</sup>
- In 2018, the states with the highest rates of death due to drug overdose were West Virginia, Delaware, Maryland, Pennsylvania, Ohio, and New Hampshire.<sup>14</sup>

### Other comorbidities from the epidemic are increasing.

- Incidences of neonatal abstinence syndrome due to in utero exposure to opioids has increased by 300% from 1999 to 2013.<sup>15,16</sup>

### Early misuse of prescription medications can indicate future opioid misuse in adolescents.

- Data from the 2009 National Survey on Drug Use and Health showed that approximately one-third of people 12 years and older who used drugs for the first time began with using a prescription drug non-medically.<sup>1</sup>
- Data from the 2018 National Survey on Drug Use and Health showed that 310,000 adolescents aged 12 to 17 misused pain relievers for the first time in the past year.<sup>12</sup>
- An estimated 0.4 percent of adolescents aged 12 to 17 had an opioid use disorder in the past year, which represents about 108,000 adolescents.<sup>12</sup>
- Opioid use disorder related to prescription pain medications is highest among adolescents and young adults, with 1.9 million people aged 12 to 26 with prescription pain medication-related opioid use disorder, as compared to 1.3 million people aged 26 or older.<sup>12</sup>
- Among people aged 12 or older who misused prescription pain relievers in the past year, the most common reason for their

last misuse of a pain reliever was to relieve physical pain. Other common reasons were to feel good or get high (10.6%) and to relax or relieve tension (9.3%).<sup>12</sup>

## Pennsylvania Statistics

### Overdoses in our own state are steadily increasing.

- In 2018, 4,422 drug-related overdose deaths were reported in Pennsylvania versus 5,398 deaths in 2017.<sup>18</sup>
- The drug-related overdose death rate in Pennsylvania was 35 per 100,000 people in 2018. Nationally in 2018, there were 67,367 drug overdose deaths, 4.1% fewer deaths than in 2017 (70,237).<sup>10</sup>
- The presence of an opioid, illicit or prescription, was reported in 82% of the drug-related overdose deaths in Pennsylvania in 2018, compared to 84% of drug-related overdose deaths in 2017.<sup>10</sup>
- In 2018, overdose decedents were primarily white, male, and 25-34 years of age.<sup>10</sup>

### Fentanyl and related synthetic opioids are at the forefront of the epidemic.

- Fentanyl was the most frequently identified substance in drug-related overdose deaths (70% of deaths), remaining consistent with 2017. The younger population demographic was associated with fentanyl usage, as fentanyl was present in more the 75% of drug related overdose decedents within the 15 to 24 and 25-34 age groups.<sup>10</sup>

### Heroin, benzodiazepines, cocaine and prescription opioids are also frequently encountered in overdose deaths.

- Consistent with prior years, in 2018, detections of multiple drugs in screenings were prevalent: 87% of decedents presented two or more drugs, 46% presented four or more drugs, and 16% presented six or more drugs.<sup>10</sup>
- 70% of drug overdose toxicology reports from 2018 contained fentanyl.<sup>10</sup>
- 35% of drug overdoses in 2018 revealed the presence of heroin.<sup>10</sup>
- 28% of drug overdoses in 2018 contained benzodiazepines.<sup>10</sup>
- 33% of drug overdoses in 2018 resulted from cocaine.<sup>10</sup>
- 18% of drug overdoses in 2018 were prescription opioid-related.<sup>10</sup>

### Neonatal abstinence syndrome still remains an issue.

- In 2019, a total of 2,140 babies were born with neonatal abstinence syndrome in Pennsylvania. The majority tested positive for some form of opioids.<sup>19</sup>

# Do Patients Recover Who Receive Substance Use Disorder Treatment?

**It is a common misconception and belief that substance use disorder treatment is not successful.**<sup>20</sup>

It is true that substance use disorder is a chronic condition and relapse is a part of this process. However, the rate of relapse is similar to, or less than that of other chronic medical conditions. Studies have shown that 40-60% of patients remain completely abstinent one year after treatment discharge.<sup>21</sup> Furthermore, recovery rates continue to increase after the first year, and by year five stabilize at about an 86% recovery rate, similar to the recovery pattern seen in cancer patients.<sup>22</sup>

The National Institute on Drug Abuse has developed a list of 13 principles for effective substance use disorder treatment. These principles include:

## The National Institute on Drug Abuse: 13 Principles for Effective Substance Use Disorder Treatment<sup>23</sup>

1. Addiction is a complex but treatable disease that affects brain function and behavior.
2. No single treatment is appropriate for everyone.
3. Treatment needs to be readily available.
4. Effective treatment attends to multiple needs of the individual, not just his/her drug misuse.
5. Remaining in treatment for an adequate period of time is critical.
6. Behavioral therapies — including individual, family or group counseling — are the most commonly used forms of drug misuse treatment.
7. Medications are an important element of treatment for many patients, especially when combined with counseling and other behavioral therapies.
8. An individual's treatment and services plan must be assessed continually and modified as necessary to ensure that it meets his or her changing needs.
9. Many drug-addicted individuals also have other mental disorders.
10. Medically-assisted detoxification is only the first stage of addiction treatment and, by itself, does little to change long-term drug misuse.
11. Treatment does not need to be voluntary to be effective.
12. Drug use during treatment must be monitored continuously, as lapses during treatment do occur.
13. Treatment programs should test patients for the presence of human immunodeficiency virus or acquired immunodeficiency syndrome, hepatitis B and C, tuberculosis and other infectious diseases, as well as provide targeted risk-reduction counseling, linking patients to treatment, if necessary.

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## Do Patients Recover Who Receive Substance Use Disorder Treatment? *(Continued)*

Literature by McLellan and O’Brien emphasizes that substance use disorder is a chronic disease and should be treated like a chronic disease.<sup>20</sup> Currently, substance use disorder is more commonly treated using the Acute Care Model rather than the Chronic Care Model.<sup>21</sup> A paradigm shift in the way that substance use disorder is viewed would be beneficial, given the similarities in medical compliance, other treatment compliance, and relapse rate that exist between substance use disorders and other chronic diseases (*Table 1*).

**Table 1: Treatment Compliance and Relapse Rates in Patients with Substance Use Disorders, Diabetes, Hypertension, and Asthma (% of Patients).**<sup>20,21,24,25</sup>

Diagnosis	Medical Compliance*	Other Treatment Compliance**	Relapse
Substance Use Disorder	60 – 80%***	—	40 – 60%
Diabetes	< 60%	< 30%	30 – 50%
Hypertension	< 40%	< 30%	50 – 70%
Asthma	< 40%	< 30%	50 – 70%

\* Compliance indicates the patient’s likelihood to adhere to his/her medication regimen.

\*\* Other treatment compliance includes: adherence to diet changes, foot care and other behavioral changes.

\*\*\* Based on compliance to naltrexone to treat alcohol dependence

Relapse rates among patients with diabetes, hypertension or asthma are just as high as relapse rates among those with substance use disorders: 30-50% of patients with diabetes and 50-70% of patients with hypertension or asthma experience recurrence of symptoms that require additional medical care.<sup>21</sup> In comparison, 40-60% of patients relapse back into substance use disorder.<sup>24,25</sup>

Studies have shown that 60-80% of patients with substance use disorder, less than 60% of patients with diabetes, and less than 40% of patients with hypertension and asthma adhere to their medication regimens.<sup>21</sup> In addition, less than 30% of patients with asthma, hypertension or diabetes adhere to prescribed diet, exercise or behavioral changes to improve health and mitigate risk factors.<sup>21</sup> Given its high prevalence across all age groups, association with unprecedented rates of overdose deaths, and high associated societal and healthcare costs, the availability of quality, evidence-based treatment for opioid use disorder is being emphasized within Pennsylvania and across the country.

# Healthcare and Societal Costs Associated with Opioid Use Disorder

The total economic burden for substance use disorder and overdose related to prescription opioid dependence ranges from \$78.5 billion to \$400 billion.<sup>4,26</sup>



A comprehensive analysis of 2013 data by Florence and colleagues allocates these costs as follows: (1) healthcare costs based on claims data; (2) substance use disorder treatment costs; (3) criminal justice costs, which comprise police protection, legal and adjudication, correctional facility and property lost costs; and (4) lost productivity costs as a result of premature death, reduced productive hours or incarceration.<sup>5</sup>

Results from economic analyses indicate that healthcare costs associated with overdoses accounted for 33% of the total economic burden related to prescription opioid use disorder.<sup>5</sup> For non-fatal opioid use, substance use disorder treatment accounted for 4% of the total economic burden, lost productivity accounted for 26% of the economic burden and criminal justice-associated costs accounted for 10% of the total economic burden.<sup>5</sup> Costs related to lost productivity and healthcare associated with fatal prescription opioid-associated overdoses accounted for 27% of the total economic burden associated with opioid misuse.<sup>5</sup> The total economic burden of heroin use disorder is estimated to be around \$51.2 billion (\$50,799/user) based on a comprehensive analysis of 2015 data.<sup>7</sup> Lost productivity (19.3%), hepatitis C treatment (19.3%), crime (10.7%) and incarceration (12%) were the major contributors to the economic burden associated with heroin use disorder.<sup>7</sup>

# How Can the PDMP Help Address Opioid Use Disorder and Overdoses in Pennsylvania?

Prescribers and pharmacists can use the PDMP to address opioid use disorder and reduce overdoses and costs in Pennsylvania in a number of ways:

## 1. The PDMP can reduce the amount of opioids accessible in the community:

- A 2016 review of 24 states who implemented state-wide use of their PDMPs indicated that PDMP use was associated with a 30% reduction in the rate of Schedule II opioid prescriptions.<sup>27</sup>
- An analysis of data from 10 states (Florida, Louisiana, Nebraska, New Jersey, Vermont, Georgia, Wisconsin, Maryland, New Hampshire, and Arkansas) showed that overall, the use of a PDMP was associated with reduced opioid volumes (2.36 kg/month).<sup>28</sup>
- Since implementation of the Pennsylvania PDMP (August 2016):
  - The rate of multiple provider episodes decreased by 94.6% (events where individuals saw 5 or more prescribers and 5 or more dispensers).<sup>29</sup>
  - The rate of individuals receiving high dosages of opioids decreased by 52% (average daily MME > 90).
  - Opioid dispensations decreased by 34%.<sup>29</sup>
  - The number of individuals with more than 30 days overlapping opioid and benzodiazepine prescriptions decreased by 53%.<sup>29</sup>

## 2. The PDMP can increase identification of persons with possible opioid use disorder and referral of these individuals to substance use disorder treatment or alternative pain management treatment.

- A survey of Rhode Island and Connecticut prescribers revealed that prescribers who conducted PDMP queries were more likely to follow-up with patients suspected of harmful prescription drug use with drug screens or referrals to treatment.<sup>30</sup>
- A study of the Oklahoma PDMP found that 21% of

prescribers using the PDMP referred patients to treatment, 21% referred patients to a mental health professional, and 64% referred patients to a pain management specialist.<sup>31</sup>

## 3. Specialty treatment providers can use the PDMP to provide better quality of care and monitor patient abstinence.

- A specialty treatment center in the state of Washington used Washington's PDMP to identify patients currently using opioid or benzodiazepine prescriptions so that the patients could safely be treated with methadone.<sup>32</sup>
- A treatment center in Delaware used Delaware's PDMP to identify undisclosed prescriptions and coordinate care with prescribers.<sup>32</sup>
- A treatment center in Vermont used Vermont's PDMP to identify patients with prescriptions or undisclosed prescriptions to reduce the chances of negative interactions with medication-assisted treatment pharmacotherapy.<sup>32</sup>

## 4. PDMPs are associated with reduced overdose deaths and lower demands for treatment:

- A study on Florida's PDMP and other prescription drug misuse and diversion prevention programs found a 41% decrease in oxycodone overdoses and an 18% decrease in overdoses caused by any prescription drug.<sup>33</sup>
- The Pennsylvania PDMP launched in August 2016, and between 2017 and 2018, Pennsylvania had a 20% decrease in overdose deaths associated with any opioid.<sup>29</sup>

## Sources

- 1) Bose J HS, Lipari RN, Park-Lee E, Porter JD, Pemberton MR. *Key substance use and mental health indicators in the United States: Results from the 2015 National Survey on Drug Use and Health*. 2016.
- 2) Centers for Disease Control and Prevention. Drug Overdose Death Data. 2016; <https://www.cdc.gov/drugoverdose/data/statedeaths.html>. Accessed April 27, 2017.
- 3) Centers for Disease Control and Prevention. 2018 Drug Overdose Death Rates; <https://www.cdc.gov/drugoverdose/data/statedeaths/drug-overdose-death-2018.html>. Accessed July 7, 2020.
- 4) Substance Abuse and Mental Health Services Administration, Matrix Global Advisors L. *Health Care Costs from Opioid Abuse: A State-by-State Analysis*. 2015.
- 5) Florence CS, Zhou C, Luo F, L X. The Economic Burden of Prescription Opioid Overdose, Abuse, and Dependence in the United States, 2013. *Medical Care*. 2016;54(10):901-906.
- 6) Hansen RN, Oster G, Edelsberg J, Woody GE, SD S. Economic costs of nonmedical use of prescription opioids. *Clinical Journal of Pain*. 2011;27(3):194-202.
- 7) Jiang R, Lee I, Lee TA, Pickard AS. The societal cost of heroin use disorder in the United States. *PloS one*. 2017;12(5).
- 8) Zibbell JE, Iqbal, K., Patel, R. C., Suryaprasad, A., Sanders, K. J., Moore-Moravian, L., Serrecchia, J., Blankenship, S., Ward, J. W., Holtzman, D.,. Increases in Hepatitis C Virus Infection Related to Injection Drug Use Among Persons Aged  $\leq$  Years- Kentucky, Tennessee, Virginia, and West Virginia, 2006-2016. *Morbidity and Mortality Weekly Report*. 2015;64(17):453-458.
- 9) Murphy S, Dweik D, McPherson S, Roll JR. Association between hepatitis C virus and opioid use while in buprenorphine treatment: preliminary findings. *The American Journal of Drug and Alcohol Abuse*. 2015;41(1):88-92.
- 10) United States Drug Enforcement Administration. *Drug-Related Overdose Deaths in Pennsylvania, 2018*. September 2019.
- 11) Lankenau S, Teti M, Silva K, Jackson-Bloom J, Harocopos A, Treese M. Initiation into Prescription Opioid Misuse among Young Injection Drug Users. *International Journal of Drug Policy*. 2012;23(1).
- 12) U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. 2018 Key Substance Use and Mental Health Indicators. August 20, 2019.
- 13) Hedegaard H, Miniño AM, Warner M. [Drug Overdose Deaths in the United States](#), 1999–2018, NCHS Data Brief, no 356. Hyattsville, MD: National Center for Health Statistics. 2020.
- 14) Wilson N, Kariisa M, Seth P, et al. [Drug and Opioid-Involved Overdose Deaths—United States](#), 2017-2018. *MMWR Morb Mortal Wkly Rep* 2020;69:290-297.
- 15) Ko JY, Patrick SW, Tong VT, Patel R, Lind JN. Incidence of Neonatal Abstinence Syndrome - 28 States, 1999-2013. *Morbidity and Mortality Weekly Report*. 2016;65(31):799-802.
- 16) McCarthy M. Incidence of neonatal abstinence syndrome triples in US. *British Medical Journal*. 2016;354.
- 17) White House. *Epidemic: Responding to America's Prescription Drug Abuse Crisis*. 2011.
- 18) Commonwealth of Pennsylvania. OpendataPA. <https://data.pa.gov/stories/s/Pennsylvania-Opioids/9q45-nckt/>. Accessed July 9, 2020.
- 19) Pennsylvania Department of Health, Bureau of Epidemiology. *Neonatal Abstinent Syndrome: 2018 Report*. August 2019.
- 20) O'Brien CP, McLellan AT. Myths about the treatment of addiction. *Lancet (London, England)*. 1996;347(8996):237-240.

Sources *(continued)*

- 21) McLellan AT, Lewis DC, O'Brien CP, Kleber HD. Drug dependence, a chronic medical illness: implications for treatment, insurance, and outcomes evaluation. *Jama*. 2000;284(13):1689-1695.
- 22) Dennis, M.L., Foss, M.A., & Scott, C.K (2007). An eight-year perspective on the relationship between the duration of abstinence and other aspects of recovery. *Evaluation Review*, 31(6), 585-612
- 23) NIDA. Principles of Drug Addiction Treatment: A Research-Based Guide (Third Edition). National Institute on Drug Abuse website. <https://www.drugabuse.gov/publications/principles-drug-addiction-treatment-research-based-guide-third-edition>. December 1, 2012.
- 24) Vuoristo-Myllys S, Laaksonen E, Lahti J, Lipsanen J, Alho H, Kalska H. Predictors of self-Reported Adherence to Naltrexone Medication in an Outpatient Treatment for Problem Drinking. *Journal of Addiction Research & Therapy*. 2013;40(4):1-6.
- 25) Pettinati HM, Volpicelli JR, Pierce JD, O'Brien CP. Improving naltrexone response: an intervention for medical practitioners to enhance medication compliance in alcohol dependent patients. *Journal of Addictive Diseases*. 2000;19(1):71-83.
- 26) U.S. Department of Health and Human Services (HHS), Office of the Surgeon General, Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health. Washington, DC: HHS, November 2016.
- 27) Bao Y, Pan Y, Taylor A, et al. Prescription Drug Monitoring Programs Are Associated With Sustained Reductions In Opioid Prescribing By Physicians. *Health affairs (Project Hope)*. 2016;35(6):1045-1051.
- 28) Moyo P, Simoni-Wastila L, Griffin BA, et al. Impact of prescription drug monitoring programs (PDMPs) on opioid utilization among Medicare beneficiaries in 10 US States. *Addiction*. 2017.
- 29) Pennsylvania Department of Health. Interactive Data Report. May 26, 2020; <https://www.health.pa.gov/topics/programs/PDMP/Pages/Data.aspx> . Accessed July 9, 2020.
- 30) Green TC, Mann MR, Bowman SE, et al. How does use of a prescription drug monitoring program change medical practice. *Pain Medicine*. 2012;13(10):1314-1323.
- 31) Prescription Drug Monitoring Program Center of Excellence at Brandeis. *Briefing on PDMP Effectiveness*. Brandeis University: Bureau of Justice Assistance;2014.
- 32) Prescription Drug Monitoring Program Center of Excellence at Brandeis. *Use of PDMP Data by Opioid Addiction Treatment Programs*. The Heller School for Social Policy and Management. 2015.
- 33) Florida Department of Health. Prescription Drug Monitoring 2012-2013 Annual Report. Tallahassee, FL. 2013.