Provider Use of Oregon's Prescription Drug Monitoring Program

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The Centers for Disease Control and Prevention (CDC) classify prescription drug abuse as the fastest growing drug problem in the United States (Office of National Drug Control Policy, 2011). According to the National Institute on Drug Abuse (2012) an estimated 52,000,000 people over the age of 12 have used prescription drugs for non-medical use. The CDC reports that in 2007 there was one drug overdose death every 19 minutes in the United States (2012). In 2010, there were enough prescription painkillers prescribed in the US to medicate every adult around the clock for one month. One solution to decreasing prescription drug abuse is the use of prescription drug monitoring programs (PDMP). Doctor of Nursing Practice (DNP) nurse practitioners (NP)are educated in clinical prevention and population health thereby allowing them to effectively understand and be a change agent in clinical practice and policy improvement related to prescription drug abuse and use of PDMPs (American Association of Colleges of Nursing [AANC], 2006). This project describes the literature on current utilization of PDMPs and one potential solution to increase use with an educational module created and implemented by a NP pursuing a DNP.

Clinical Problem Description

In 2010, President Obama released the "National Drug Control Strategy" which outlines the administration's approach to drug policy, and includes the strategy that all states adopt PDMPs (Paulozzi & Baldwin, 2012; Office of National Drug Control Policy, 2011). Currently, 42 states have prescription drug monitoring programs (Finklea, Bagalman, & Sacco, 2012). The state of Oregon is currently trying to decrease prescription drug abuse and misuse with the Oregon Prescription Drug Monitoring Program (OR PDMP). This program tracks and monitors the prescribing and dispensing of schedule II through IV controlled substances (Oregon Health

Authority, 2012). Although the "National Drug Control Strategy" was released, and the OR PDMP is in place, provider usage remains low (T. Beran, personal communication, October, 16, 2012) and there is opportunity for increasing provider usage and encouraging safer prescribing practices.

In 2011, when the OR PDMP was launched, providers were educated and informed about the OR PDMP through a mailed pamphlet and the use of outreach specialists (Oregon Health Authority, 2012). According to Todd Beran, the OR PDMP Program Coordinator, through tracking and monitoring prescribing practices, the OR PDMP aims to decrease prescription drug overdoses, deaths, hospitalizations, and injuries related to prescription drug use/abuse (personal communication, October, 16, 2012). Beran states, the program is underutilized due to many providers not appreciating the potential safety benefits. Therefore, this provider education project about the OR PDMP was pertinent to increasing usage and changing current practice.

Population Affected

Persons most prone to prescription drug abuse often have a prior history of substance abuse or addiction (Parran, Wilford, & DuPont, 2012). These patients use prescription drugs for non-medical purposes and in non-prescribed doses and routes (Parran et al., 2012). Younger persons who have greater access to these medications, such as healthcare workers, are at an increased risk for prescription drug abuse and misuse (Parran, et al., 2012). Typically, those who use opioids for non-medical purposes are men between the ages of 18 and 34 (Manchikanti, 2007). Among those under 18 years of age, females are more likely to use opioids for non-medical purposes (Manchikanti, 2007). Underprivileged men who live rurally and are between

the ages of 20-64 are most likely to overdose on prescription medications compared to other groups within the population of the US (Paulozzi & Baldwin, 2012). Additionally, persons with mental illness who are prescribed opioids are at greater risk of overdosing on those medications (Paulozzi & Baldwin, 2012). Given the diversity of the population affected by prescription drug abuse and misuse, measures to decrease this problem are imperative to public health and should be a priority of medical providers.

Epidemiology

According to Parran et al., (2012) in 2009 an estimated 6.2 million Americans or 2.5% of the US population, reported using prescription drugs for non-medical purposes in the previous 30 days. Between 1992 and 2003, non-medical use of prescription drugs in the US doubled (Parran et al., 2012). Prescription drug overdoses involving opioid analgesics have surpassed overdoses of cocaine or heroin combined (Paulozzi & Baldwin, 2012). In 2008, 14,800 overdose deaths were attributed to opioid pain relievers, more deaths than attributed to homicide by firearms (CDC, 2011; Kochanek, Xu, Murphy, Minino, & Kung, 2011). In addition to the high rate of death attributed to opioid analgesic overdoses:

> "for every unintentional overdose death related to opioid analgesics, nine persons are admitted for substance abuse treatment, 35 visit emergency departments, 161 report drug abuse or dependence, and 461 report nonmedical uses of opioid analgesics (Paulozzi & Baldwin, 2012, p. 1)."

Based on Paulozzi and Baldwin's (2012) statistics, prescription drug abuse and misuse is a pervasive and expensive public health problem. In 2010, 400 Oregonians died from prescription drug overdoses (Widman, 2011). According to data collect in 2010 and 2011, Oregon ranks number one for the most people over the age of 12 to use prescription pain relievers for non-

medical purposes (Substance Abuse and Mental Health Services Administration, 2013). Currently, 53% of overdoses in Oregon are associated with prescription opioids, and 50 % of all drug-related deaths are associated with Methadone (Millet, 2012; Kohn, 2013). The national and local (Oregon) epidemic of prescription drug abuse illuminates the need for more methods to decrease this serious problem.

Purpose of this Project

The purpose of this project was to develop and present an educational PowerPoint presentation for providers with the aim to increase utilization of the OR PDMP. With increased utilization of the OR PDMP, the goal was to increase appropriate and safe prescriptive practices, facilitate conversations with providers and patients, and identify those at risk for prescription drug abuse (Oregon Health Authority, 2012; T. Beran, personal communication, October 16th, 2012). By identifying how to increase usage of this program, the OR PDMP can potentially decrease the morbidity and mortality related to prescription drug abuse.

DNP role

DNP prepared nurse practitioners are able to identify and close gaps in health care provider knowledge about evidence-based practice. The DNP also is equipped to translate research literature into practice (AACN, 2006). Measuring the effect of an innovation, such as a drug prescription monitoring program, requires understanding the complexity of studying a multifaceted intervention. The DNP is prepared to work collaboratively with interdisciplinary teams, such as administrators, physicians, nurses, and information technology staff (Peterson, 2011). The collaborative approach between different facets of the healthcare team is effective for developing policies, accessing protected data, and identifying outcome indicators (Peterson, 2011).

Review of Literature

An Ovid/Medline search was done with a research librarian at Oregon Health and Sciences University (OHSU) library in July 2012. Parameters for the search were set by only including articles in English, had a full text available, and those published after 1995. A combination of the following nine search terms was used “drug monitoring”, “prescription drugs”, “pharmacovigilance”, “drug prescriptions”, “prescription drug monitoring”, “substance related disorders”, “opioid related disorders”, “questionnaires”, and “physician practice patterns”. Twenty-two articles from this search met inclusion criteria, as many articles excluded did not pertain to prescription drug monitoring programs. One hundred forty five articles were eliminated as many of them did not pertain to prescription drug monitoring programs. The majority of articles found and used for this paper were editorials, letters to the editors, government documents, research reports, and peer reviewed articles. It is important to note, that the term prescription drug abuse is used synonymously with the term non-medical drug use throughout the literature.

In addition, opinion articles published by national professional organizations were retrieved via “Google” search using the terms “prescription drug abuse statistics”, “morbidity and mortality of prescription drug abuse”, “use of prescription drug monitoring programs”, “prescription drug addiction”, ”management of chronic pain and opioid contracts”, and “efficacy of opioid contracts." Finally, national and state policies related to prescription drug monitoring programs were compared for congruency and discrepancies. The websites reviewed included the American Medical Association, the American Pain Society, the Centers for Disease Control and Prevention, the Oregon Health Authority, the American College of Obstetricians and

Gynecologists, and the Office of National Drug Control Policy. *UpToDate*, an evidence-based, physician-authored clinical decision support resource was also utilized.

Drug Abuse

According to the CDC (2011a) since drug addiction, diversion, and overdose are on the rise, it is imperative to public health that strategies to decrease these issues are identified and implemented. In the US, drug overdoses increased to an all-time high of 38,000 in 2006 (DuPont, 2010). In 2008 2.5% of the population over the age of 12 stated they had used prescription medication for non-medical uses in the last 30 days (DuPont, 2010). Long acting prescription opioids appear to play a key role in both fatal and non-fatal prescription drug overdoses (Kohn, 2013; Paulozzi et al., 2009). For example, in Oregon the medication methadone is involved in more than half of all deaths related to prescription opioids (Kohn, 2013). In West Virginia, a study found that in overdoses involving methadone, two thirds of those who died were not prescribed methadone, and almost the entire group of methadone overdoses had a history of substance abuse or a marker of current drug abuse (numbers of illicit drugs versus other prescription drugs were not discussed) (Paulozzi et al., 2009). Additionally, in the group who overdosed on other opioid analgesics, 82% had markers of other types of substance abuse, and nearly 40% were also using benzodiazepines (Paulozzi et al., 2009). One solution to reducing narcotic drug abuse is having a PDMP in place, because it gives providers one more clinical tool to identify when someone could be at risk.

Prescription Drug Monitoring Programs

The first PDMPs started in the 1970s and in the last decade most of these programs have become web based (Paulozzi & Stier, 2010). Currently, PDMPs are used in 42 states and six states have legislation to develop these programs (Perrone & Nelson, 2012). As of 2012, there

are nine states that require some types of healthcare providers to use their state's PDMPs (Clark, Eadie, Kreiner, & Strickler, 2012). Outside of requiring healthcare providers to use this program, an observational study done in the US from 1999-2005 showed that PDMPs have very little impact on overall opioid consumption and no impact on drug overdose mortality rates (Paulozzi et al., 2011). Although PDMPs apparently have little impact on opioid consumption, a retrospective study done by the University of Colorado showed that the use of PDMPs decreased abuse and misuse of prescription drugs over time and slightly reduced the need for opioid addiction treatment (Reifler et al., 2012; Paulozzi et al., 2011). Although there are many programs in use, there is no research to support whether one program is more effective or successful than another. Each state program is different; some of these programs are considered public health tools, while others are considered law enforcement tools (T. Beran, personal communication, October 16th, 2012). PDMPs also vary on types of users who can access them, whether those with access are healthcare providers or law enforcement personnel (Office of National Drug Control Policy, 2011).

Oregon

Oregon instituted a web-based statewide PDMP in 2011 (Oregon Health Authority, 2012). The OR PDMP aims to "support the appropriate use of prescription drugs," and to increase public health safety through decreasing abuse, misuse, and diversion (Oregon Health Authority, 2012; T. Beran, personal communication, October 16, 2012). This program tracks and monitors prescribing and dispensing of controlled substances, and supports the appropriate use of prescription medications (Oregon Health Authority, 2012). The OR PDMP is 18 months old and currently only 25% of providers are using this system (T. Beran, personal communication, February, 11, 2013). This program has the potential to make prescribing controlled substances

safer in that it can help prevent over-prescribing and multiple prescriptions being given to the same person by different providers. In an attempt to improve upon the existing OR PDMP, information was collected from providers using the system in 2012 (T.Beran, personal communication, October 16, 2012).

Providers were surveyed about their opinions and use of the Oregon PDMP and the results were published in early January 2013 (Oregon Health Authority, 2013). The survey results showed that most providers find the program useful, but indicated that it took too much time to use, and many would like support staff to have access to the system (Oregon Health Authority, 2013). The results of the survey demonstrated that the program has facilitated important conversations about prescriptions with other providers and patients, and has helped providers identify those at risk for prescription drug abuse and "doctor shopping" (Oregon Health Authority, 2013). Furthermore, the survey results showed that 59% of providers reduced or eliminated prescriptions based on information they found through the PDMP (Oregon Health Authority, 2013).

Kentucky

The Kentucky PDMP is known as KASPER, and is considered one of the more successful PDMPs by other programs (T. Beran, personal communication, October 16th 2012). KASPER was started in 2000, and became web based in 2005 (D. Hopkins, personal communication, November 7th, 2012). According to Dave Hopkins, the KASPER program manager, there was great effort and money directed toward increasing provider use from 2006-2011 (D. Hopkins, personal communication, November 7th, 2012). By the end of 2011, KASPER's user rate was 32% of all providers; which was nearly double the users of other programs in the US (T. Beran, personal communication, October 16th, 2012; D. Hopkins,

personal communication, November 7th, 2012). In 2011, Kentucky passed legislation requiring all prescribers to use KASPER (Clark et al., 2012). With this legislation, use of KASPER should be one hundred percent, however there is no mechanism in place to track provider use (D. Hopkins, personal communication, November 7th, 2012).

KASPER is well known amongst PDMPs across the country because they achieved higher user rates than most other states, surveyed providers, and published their results (D. Hopkins, personal communication, November 7th, 2012). The University of Kentucky and KASPER joined together to survey providers and publish their results (D. Hopkins, personal communication, November 7th, 2012). The KASPER satisfaction survey looked at provider satisfaction and opinions about PDMPs. The survey found that 67.8% of providers were satisfied with KASPER, and 96.4% felt it was an effective tool for keeping track of an individual's scheduled prescription drug history (Kentucky Cabinet for Health and Family Services, 2010). Additionally, nearly 90% of users of KASPER used the program to help with the decision to deny medications to patients, when prescribing patterns appeared to be inappropriate in the patient database (Kentucky Cabinet for Health and Family Services, 2010).

Canada

The province of British Columbia implemented an all prescription drug monitoring program known as PharmaNet in 1995 (Ministry of Health Services, 2012; Dormuth, Miller, Huang, Mamdani, & Juurlink, 2012). In 2012 a group from the Canadian Drug Safety and Effectiveness Research Network conducted a time series analysis using records from PharmaNet from 1993-1997 for residents receiving social assistance or over the age of 65 (Dormuth et al., 2012). The analysis showed a 32.8 % decrease in inappropriate prescriptions for opioids and 48.6 % decrease in inappropriate prescriptions for benzodiazepines in a six month period following

the implementation of the PDMP (Dormuth et al., 2012). Although, this study showed promising results in the use of PDMPs it was an isolated study in a socialized medical system and was dependent on how the authors defined "inappropriate prescriptions"(Dormuth et al., 2012). The sample included 47, 983 Canadians and was biased in that only patients who were on social assistance or over the age of 65 were included in the study (Dormuth et al., 2012). Although the results of this study demonstrated that the PharmaNet was effective in decreasing prescriptions, it cannot be generalized to the US general public due to the lack of a national database, and a different type of health care system and an ineffective tracking system.

Gaps in the Literature

There was a large amount of literature on the statistics of prescription drug abuse, suicide rates, overdose rates, non-medical use of medications, and the cost of substance abuse (Kerlikowske, Jones, Labelle, & Condon , 2011; Paulozzi, Kilbourne, & Desai, 2011). However, there was conflicting information on whether or not PDMPs decrease rates of prescription drug abuse, overdoses, or change prescriptive practice (Kerlikowske et al., 2011; Paulozzi et al., 2011). Major gaps in information on this subject were likely related to lack of evidence on the effectiveness of the programs (Oregon Health Authority, 2013; Kentucky Cabinet for Health and Family Services, 2013). Due to the many gaps in literature, there is room for improvement to identify why providers underutilize PDMPs.

Practice Improvement

It takes at least 17 years to translate research into practice (Westfall, Mold, & Fagnan, 2007). When analyzing use of CDC guidelines Larson (2003) found that it took two years, dozens of experts, significant resources to disseminate and implement CDC guidelines, and they required regular updates. According to Larson (2003) actual costs of guideline development and

implementation (education, monitoring, and feedback) were often not included in economic analysis. Some programs fail to consider the variety of barriers to adherence, therefore are less likely to succeed. Variable compliance is based on baseline compliance, the intensity or audit and feedback, and level of motivation by health care providers to change targeted behavior (Susdawad, 2007; Miller, Sorensen, Seltzer, & Brigham, 2006).

The advocates of KASPAR implemented a policy within the Kentucky legislature to make using the program mandatory for all providers who prescribe scheduled drugs (D. Hopkins, personal communication, November 7th, 2012). This law was passed after many years of KASPER being voluntary and underutilized by providers. Significant time and financial outlay did not significantly increase provider use. The KASPER satisfaction survey and the OR PDMP survey showed similar results in provider opinions about the use of their state's PDMP, however neither survey gave direct information about how to increase use (The Kentucky Cabinet for Health and Family Services, 2010; Oregon Health Authority, 2013).

Providers must be motivated by desire to improve patient care and the innovation must be better than current practice in order to change behavior. Providers may lack familiarity and awareness of the benefits of OR PDMP or feel that the program is not relevant to their clinical practice. There may be lack of agreement that the OR PDMP actually works or changes patient outcome. There may be no provider motivation or personal commitment to change practice, since there is a tendency to do what is comfortable.

Innovations must be flexible, simple, rigorous, and must not be used punitively. Morgan (2000) defines professional compliance as the adoption of clinical practices that conform to guidelines which is a key variable during implementation. Measurement strategies include implementation of educational materials, face-face education, audit and feedback, computer

reminder systems, and clinical management. In an attempt to increase utilization, the DNP can use best educational practices to potentially change utilization of the OR PDMP.

Summary of Proposed Solution

The purpose of this project was to educate providers in Oregon working in primary care and emergency care on the importance of using the OR PDMP in their everyday practice. The ultimate goal of increasing provider use of the OR PDMP is to promote safe and effective prescribing and that best practices would include using this program every time a controlled substance was prescribed

Project Approach

Setting

The project settings are Oregon Health and Science University's Gabriel Park Clinic and Emergency Department. Primary care and emergency care providers are of interest because they are in the top five types of providers who prescribe the most opioids (Volkow, McLellan, Cotto, Karithanon, & Weiss, 2011). It is unknown if the providers in these two locations utilize the OR PDMP frequently or at all. The Gabriel Park Clinic is a primary care clinic in the Portland Metro area that manages patients throughout the lifespan for acute and chronic health problems, and preventative care. The Oregon Health & Science University emergency department is in the Portland Metro area and sees patients for acute and chronic problems, and providers frequently prescribe scheduled medications.

Organizational readiness to change.

Readiness for change was mixed since most of the providers were already using the OR PDMP (B. White, personal communication, February 26, 2013). Some providers at both locations were using the prescription monitoring program, but it was unknown if these clinicians

were consistently using the program or why others did not utilize the program. Part of the survey asked about current and future utilization of the OR. The survey also inquired about barriers and the likelihood of future use of the OR PDMP.

Barriers, facilitators, challenges.

Providers across the state identify that time needed to log into the program and search for their patients was a significant primary barrier to use of this program (T. Beran, personal communication, October 16, 2012; Oregon Health Authority, 2013). Another barrier was that many providers felt they did not need a prescription drug monitoring program because "they knew their patients" (T. Beran, personal communication, October 16th, 2012; D. Hopkins, personal communication, November 7th, 2012). One facilitator to encourage providers using the Oregon Prescription Drug Monitoring Program was that the heads of all the hospital systems in the area voiced approval of its use and encouraged their clinicians to utilize this health tool (T. Beran, personal communication, October 16th, 2012).

Population

Inclusion and exclusion criteria.

The participants worked in either the Oregon Health and Science University Gabriel Park Family Practice clinic or the OHSU emergency care department, had a Drug Enforcement Administration number, and had the ability to prescribe narcotics in the state of Oregon. Exclusion criteria for participants included those who did not work in primary care or urgent/emergent care, and did not prescribe controlled substances.

Size and rationale.

Due to the qualitative nature of this project, there was no definitive number of participants needed, however the more providers recruited the stronger the findings. The goal was to receive at least 20 responses.

Recruitment plan.

The population consisted of medical doctors, nurse practitioners, physician assistants, and doctors of osteopathic medicine. The list of providers was obtained by contacting the administrators at both locations. A convenience sample of providers who consented to the study was asked to electronically review a fifteen slide PowerPoint presentation on the benefits of the OR PDMP. They were asked to complete a survey about the effectiveness of the PowerPoint and whether it would change their usage of the program.

Data Collection

Data was collected using a Survey Monkey. An email was sent to the Gabriel Park and ED providers with an introduction to the program, a copy of the educational PowerPoint, and a link to the survey monkey. The participants remained anonymous, as the survey did not ask for names or other identifying information. Demographics of the population were not collected, since it was difficult to maintain anonymity amongst providers. The providers had two weeks to complete the survey. The survey took participants no more than five minutes to complete.

The Survey consisted of five questions (see Appendix A, table 1). The survey questions inquired about whether or not the providers prescribed schedule II-V controlled substances, and the percent of time providers used the OR PDMP when prescribing controlled substances. Additionally, the survey asked what barriers to use of the OR PDMP existed, and if further education would encourage more providers to use this program.

Outcome Results

The results of the survey were analyzed to identify the providers' opinions of the OR PDMP and the power point. The Survey Monkey themes included current utilization, barriers, effectiveness of the PowerPoint to change practice, and future utilization. The aim of this analysis was to identify reasons why providers were or were not using the program. The percentage of yes and no answers were collated; percentage of time utilizing the program, and barriers were analyzed. The intent of this project was to see if further education was helpful in persuading providers to use the OR PDMP in the future. The results of the survey were disseminated to the providers via email and a through a PowerPoint presentation to the School of Nursing faculty and DNP students. Todd Beran, the program manager of the OR PDMP was sent the results of the survey.

Discussion

Context.

Both OHSU Gabriel Park Family Medicine clinic and OHSU Emergency department administrators encourage their providers to use the OR PDMP (B. White, personal communication, February 25th, 2013; A. Lines, personal communication, February 2nd, 2013). Although providers are encouraged, there was no way for either of these locations to know how often or infrequently providers were using the OR PDMP, there was also no way to know which type's (MDs, PAs, NPs, Dos) of providers were using the program. Although demographics were not collected, the majority of the surveys were sent to physicians and resident physicians, therefore it was possible that physicians completed the majority of surveys. Due the small sample size, and lack of demographics collected, the results could not be generalized.

Implementation.

The project was implemented in May 2013, which was later than anticipated due to a delay in approval by the OHSU International Review Board (IRB). Emails were sent to providers at the OHSU Gabriel Park Clinic and OHSU Emergency Department. The recruitment emails summarized the purpose of this project, asked providers to review the 15 slide PowerPoint presentation, and to complete the five question survey. The email also stated that consent was implied if the participants completed the survey.

Outcomes.

Emails were sent to a total of 127 providers. The survey return rate was 14.2 %, or 18 total surveys returned. Demographics of these providers were not collected, in order to maintain confidentiality, however the majority of surveys were sent to physicians and resident physicians. The survey was open for two weeks. After the two week period, the survey was closed and the findings were analyzed.

Findings.

The survey consisted of five questions and asked about provider use of the OR PDMPD, barriers to use, and if the educational presentation would increase use. All five questions had to be completed in order to submit the survey.

Question 1.: Do you prescribe schedule II-V controlled substances? The findings to this answer were 100 percent answered yes.

Question 2. How often are you using the Oregon Prescription Drug Monitoring Program? 50 % of the providers were using the program less than 25 % of the time, 22 % used it 26-50 % of the time, and 22 %t used the program 51-75 % of the time. Surprisingly, only 5.6 % of the respondents used the program 76-100 % of the time.

Question 3. What barriers prevent you from using the OR PDMP more frequently? Check all that apply. For this question, respondents were asked to select all answers that they felt were barriers to use. Their choices were "time," "not needed in my practice," "difficult to access," and "Other (Please specify)." Ten respondents stated that time was a barrier to use. No respondents felt that this program was not needed in their practice. Nine respondents felt that the OR PDMP was difficult to access. The answer choice "Other (Please specify)" was answered by six respondents. The answers described problems with the login and forgetting the password.

Question 4. Do you think this educational presentation will encourage more providers to use the OR PDMP more frequently? Although the providers surveyed were assumed to be using the OR PDMP, they were asked if an educational PowerPoint such as the one they watched would encourage more providers to use the program. Of the respondents 72 % stated that "yes" they thought the educational PowerPoint would increase provider use. Of the providers who did not think this educational PowerPoint would increase usage of this program, they were asked why they thought this. Their responses stated that they felt that time was a huge barrier to use, and that they assumed that if providers were interested in this program, they would already be using it.

Question 5. After watching the presentation how much did the likelihood that you will use the Oregon Prescription Drug Monitoring Program change? Of the 18 responses, 11 %t stated that their likelihood for use of this program would have a "large increase." 44 % of respondents stated that their likelihood of use increased by a "small amount." The remaining 44 % reported that after watching the PowerPoint presentation, their use of the OR PDMP would not change.

Clinical implications.

The findings of this survey illuminate a few areas that are pertinent to clinical practice. Most clinicians using this system in both locations are using it less than 25 % of the time. There are no findings from other surveys to decipher if this is a common result. However, some states have made use of PDMPs required by clinicians 100 % of the time when prescribing controlled substances, so it can be surmised that frequent usage is thought to decrease drug abuse, misuse, diversion, and overdose, however there is no research to back this assumption up (Clark et al., 2012).

When surveyed, providers already using the program stated that they thought increased education would increase provider use. This finding was reported by 72 % of providers who answered the survey and are already using this program. This result showed that increased education would in fact increase usage. In the future providers not using the OR PDMP need to be surveyed. Furthermore, the survey results showed that 50 % of the respondents felt they would increase their usage of this program at least a "small amount." There is no way to know what each provider thinks is a "small amount," or if this actually happens, however it demonstrates that many providers think that provider educational such as a PowerPoint can increase utilization of PDMPs. In addition to these new findings, time and technology were identified as primary barriers to preventing utilization.

Barriers to use of the OR PDMP were found to be similar to the findings from surveys done by other groups (Oregon Health Authority, 2013; The Kentucky Cabinet for Health and Family Services, 2010). Currently there is no research on how to increase provider use of these programs, or how to overcome the barriers of time and technology. The Kentucky PDMP spent many years and large amounts of money trying to increase provider usage of their program (D. Hopkins, personal communication, November 7th, 2012). Their program sent representatives to

clinics, conferences, placed advertisements in journals, and sent out educational flyers in an attempt to increase provider utilization with limited success (D. Hopkins, personal communication, November 7th, 2012). The techniques they used vary widely in their efficacy for changing provider behavior, however the interactive techniques were considered the most effective (Bloom, 2005). These utilization techniques were not studied or published, however they were able to achieve a 32 % utilization rate, which was much higher than most states (D. Hopkins, personal communication, November 7th, 2012). Shortly after the 32% utilization rate was achieved, Kentucky passed legislation requiring providers to use the OR PDMP (D. Hopkins, personal communication, November 7th, 2012). In Oregon, there is currently no plan to require provider use of these programs (T. Beran, personal communication, October 16, 2012).

There is currently no research showing that states that require PDMP usage actually have decreased overdoses, non-medical use, or fewer issues with prescription drug abuse. There is very little research on the effectiveness of these programs. Furthermore, there is no definition for "effective," in reference to these programs (Office of National Drug Control Policy, 2011). Therefore what small amount of literature there is on program effectiveness cannot be generalized.

Although time was mentioned as a barrier, technology was mentioned equally as being a major utilization barrier. Password issues and login problems were mentioned as barriers to use of the OR PDMP. These two issues were also mentioned in the OR PDMP provider survey done in 2012 (Oregon Health Authority, 2013). In the OR PDMP survey, providers stated that the website's login can was cumbersome and the password too complex to be easily remember. These two issues can be difficult to overcome as the technology used for these types of sites was structured to maintain the patient confidentiality. However, if the OR PDMP could hire someone

to increase provider usability while maintaining confidentiality, this issue could be overcome. Lastly, in order to change provider behavior, various techniques need to be employed to influence the greatest number of providers.

Changing provider behavior and educating providers presents many challenges. Provider behavior is often dictated by time constraints, organizational policies, educational backgrounds, previous experiences, and reimbursement (Trowbridge & Weingarten, 2001; Shershneva, Wang, Lindeman, Savoy, & Olson, 2010). Lectures and printed materials are the traditional ways healthcare providers are educated or encouraged to change their practice behavior (Trowbridge & Weingarten, 2001). However, there are newer ways to educate providers and change their practice patterns that appear to be more beneficial than the traditional methods (Trowbridge & Weingarten, 2001).

Interactive education techniques such as audit/feedback, academic detailing, and reminders are the most effective in changing provider behavior and patient outcomes (Bloom, 2005). These methods are more effective, but also more expensive to employ and require more time of providers away from their practices (Bloom, 2005). Clinical practice guidelines and opinion leaders offer a less effective method than interactive techniques, but more effective than didactic presentations (Bloom, 2005; Trowbridge & Weingarten, 2001). Didactic presentations and distributing printed material however less effective, offer providers and employers a less costly and timelier method to try to change provider practices (Bloom, 2005). Therefore to change provider practices like increasing utilization of the OR PDMP, there needs to be a cost effective and timely intervention that is attractive to providers. A DNP prepared NP is educated in how to bring research into everyday practice, thereby making them excellent candidates to

develop interactive educational tools that are cost effective, timely, and increase provider utilization of PDMPSs.

Conclusion

Prescription drug abuse is a very serious and pervasive public health issue. One possible solution to combating this problem is the use of prescription drug monitoring programs. There is very little research whether these programs decrease prescription drug abuse, impact prescriptive practices, and ensure public safety. Furthermore, in terms of evaluating these programs, there is also no consistent measurement of "effectiveness." The OR PDMP recent survey (2013) found that providers have been able to decrease inappropriate prescriptions, identify if a patient was or was not "doctor shopping," and had increased communication with patients and other providers (Oregon Health Authority, 2013). The results of this survey show that this program is "effective," in increasing communication with patients and providers (Oregon Health Authority, 2013). However, there is little evidence on how programs such as this one can increase usage amongst providers.

In order to meet the goals of the OR PDMP, the program must be used by as many providers as possible. As of now, there are only about 25 percent of the providers who are using it. Therefore, it is at the utmost importance to increase provider usage, however there is no evidence on how to do this. Prior to sending out the PowerPoint and survey for this project, it was suggested that increasing education/ giving providers a "refresher course," about the OR PDMP could potentially increase usage of this program. Although this project was tested on providers at clinics that already encourage their providers to use this program, the results of this survey showed that 72 %t of the providers agreed that increased education would increase usage

of this program. The next step is to survey providers who are NOT using this program, to see if in fact this premise is true.

In addition to this finding, there is one other significant piece of information gleaned from this project. Providers who currently use this program consider time and technology significant barriers to using the OR PDMP. These findings were also identified in surveys previously done by the OR PDMP and by the Kentucky PDMP. It is unknown how providers and the OR PDMP can overcome the barrier of time. However, the barrier of technological problems needs to be researched by someone who specializes in technology used for programs like these, and then the OR PDMP can possibly address these issues.

Changing healthcare provider behaviors can be extremely challenging. The DNP prepared NP is educated in how to improve practice through translating research into clinical practice (AACN, 2006). In addition to this the DNP prepared NP is equipped to work with interdisciplinary teams in order to influence the health of the population (AACN, 2006). Thereby, making them an excellent resource to identify solutions to improve use of programs such as the OR PDMP, and hopefully reduce public health problems associated with prescription drug abuse and misuse.

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Appendices

Table 1

Provider use of the OR PDMP survey

1.	Do you prescribe schedule II-V controlled substances? a. Yes b. no
2.	How often are you using the Oregon Prescription Drug Monitoring Program? a. <25% of the time b. 26-50% of the time c. 51-75% of the time d. 76-100% of the time
3.	What barriers prevent you from using the OR PDMP more frequently? Check all that apply a. Time b. Not needed in my practice c. Difficult to access d. Other, please discuss
4.	Do you think this educational presentation will encourage more providers to use the OR PDMP more frequently? a. Yes b. No If no, why?

5.	After watching the presentation how much did the likelihood that you will use the Oregon Prescription Drug Monitoring Program change? a. Large increase b. Small increase c. No change d. Small decrease e. Large decrease