ALASKA NURSE PRACTITIONERS BARRIERS TO USE OF PRESCRIPTION DRUG MONITORING PROGRAM

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ALASKA NURSE PRACTITIONERS BARRIERS TO USE OF PRESCRIPTION DRUG MONITORING PROGRAM

A

PROJECT

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Abstract

Prescription drug monitoring programs (PDMPs) are still in their infancy but have begun to demonstrate themselves as potentially useful tools to enhance safe and responsible prescribing of controlled substances. However, little is known about how Nurse Practitioners (NPs) use these programs and the potential barriers they face. The purpose of this project was to describe Alaskan Nurse Practitioner's (NPs) current practice, beliefs, and barriers regarding the use of the Alaska PDMP. A questionnaire was sent to 635 Alaskan Advanced Nurse Practitioners and a total of 204 valid questionnaires were returned. The survey results provided data regarding prescribing habits, barriers to the use of the PDMP, and barriers registering for the PDMP, as well as opinions on items that could make the PDMP easier to use and more useful in clinical practice. It was found that more attention is needed to maximize its exposure and incorporation into daily workflow if it is to achieve its full potential for reducing drug misuse and abuse while increasing patient safety. Additional consideration should be given to authorizing registered users to delegate authority to a licensed person on their staff to access the PDMP in an attempt to reduce time commitments and increase its usage. Many providers felt that assigning each individual a unique patient identifier could prevent consumers from filling prescriptions under aliases or using multiple addresses, which undermines the effectiveness of the PDMP. Finally, an overwhelming majority of users want faster data entry and proactive reports. This project begins the exploration of the differences between PDMP users and nonusers and how NPs believe the process can be improved. A better understanding PDMP use will aide providers in safe prescribing practices while curbing the prescription drug epidemic and ultimately reducing abuse, misuse, and death from overdose.

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Prescription drug abuse has been declared the fastest growing drug problem in the U.S. (Paulozzi et al., 2012). Until the mid-1990s opioid pain relievers (OPRs) were reserved for the treatment of cancer pain (Reisman, Shenov, Atherly, & Flowers, 2009). In the late 1990's and early 2000s there was a new movement to recognize the under treatment of pain (Garcia, 2013). Thus began an effort to recognize pain as the fifth vital sign, and a method for routine screening and assessment of pain was established (Garcia, 2013). The Joint Commission mandated pain as a vital sign and implemented the use of pain scores as a measure of patient satisfaction (Perrone, DeRoos, & Nelson, 2012). Concurrently, large organizations, such as the American Pain Society, published guidelines that called for aggressive treatment of any reported pain, and recommended an extension on the indication for OPRs to include treatment of chronic non-cancer pain (Keyes, Cerdá, Brady, Havens, & Galea, 2014; Perrone et al., 2012). The Department of Veterans Affairs also initiated a campaign aimed at improving pain management as well as treating chronic pain (Keyes et al., 2014). The combination of these actions served to further fuel the movement to aggressively treat pain with OPRs (Keyes et al., 2014). The threat of tort litigation for failure to treat or manage pain was used to encourage providers to comply and incentivize change (Garcia, 2013).

Over time, healthcare's philosophy on the use of opioids for non-cancer pain shifted, and practitioners increased their rate of opioid prescriptions in an attempt to meet these new recommendations (Garcia, 2013; Paulozzi et al., 2012). In current practice, a patient's subjective reports of pain may take precedence over other potentially competing considerations, such as addiction (Garcia, 2013). Despite their benevolent intentions, this new model created a scenario where prescribers including physicians, physician assistants, dentists, and nurse practitioners

(NPs), inadvertently joined drug cartels and street dealers as major players in the escalating drug use problem that America faces today (Perrone et al., 2012).

The United States consumes OPRs at a greater rate than any other nation in the world (Paulozzi, Mack, Hockenberry, 2014). Between 1999 and 2010 the sale of OPRs quadrupled, resulting in enough OPRs being prescribed to medicate every adult in America with 5mg of hydrocodone every 4 hours for a month (CDC, 2011). By 2012 37% of opioid users consumed an opioid stronger than morphine, 43% used a morphine equivalent strength opioid, and 20% used a weaker than morphine opioid (Frenk, Porter, & Paulozzi, 2015). This represents a 20% increase in patients that used a stronger than morphine opioid and 22% decline of patients that used a weaker than morphine opioid between 1999 and 2012 (Frenk et al., 2015). By 2013 almost 258.9 million prescriptions for OPRs were written in the U.S., twice as many per capita than the second leading nation of Canada (Paulozzi et al., 2014).

Prescription painkiller abuse is one of the fastest growing health problems in the United States today (Shepard et al., 2014). Between 1997 and 2003 there was a drastic increase in the yearly shipments of pain medications (Reisman et al., 2009). Oxycodone shipments increased 479%, hydrocodone increased 148%, and morphine increased 100% (Reisman et al., 2009). Currently, the most dispensed pharmaceutical in the United States (U.S.) is hydrocodone/acetaminophen (e.g., Vicodin, Norco, Lortab), which accounts for nearly 137 million prescriptions annually (Shepherd et al., 2014). While Americans are currently estimated to be approximately 4.6% of the world's population, they consume nearly 80% of the global supply of OPRs (Wang & Christo, 2009). As a result, in the past year alone one out of every twenty Americans reported they had misused or abused prescription painkillers, and almost 17,000 Americans died from prescription painkiller overdoses (Shepard et al., 2014). The

problem has become so invasive in our culture that the Center for Disease Control and Prevention (CDC) has classified prescription medication abuse as a health epidemic (Shepard et al., 2014).

This phenomenon results in a high cost for the American economy. The U.S. Department of Health and Human Services estimates that prescription painkiller abuse costs the United States between $125 billion and $180 billion dollars annually (Shepard et al., 2014; Worley et al., 2012). A 2006 breakdown of nonmedical OPR use and abuse costs found that this evolving problem accounted for $42 billion for lost productivity, $8.2 billion for criminal justice costs, $2.2 billion for drug abuse treatment, $944 million for medical complications, and $72.5 billion in direct healthcare costs for insurers annually (CDC, 2011; Shepard et al., 2014).

Recently, a shift from focusing on the undertreatment of pain to addressing prescription drug morbidity and mortality has begun (Garcia, 2013). Various policies and regulatory approaches are being developed in an effort to combat this prescription drug abuse epidemic (Garcia, 2013). The pendulum has swung so far that there is now litigation in the opposite direction. A southern California physician has been charged with three counts of second degree murder in relation to the overdose deaths of her clients (Chakravarthy, Shah, & Lotfipour, 2012). She reportedly wrote 27,000 prescriptions for opiates and benzodiazepines over a three year period (Chakravarthy et al., 2012). If convicted she could receive up to a 45 year prison sentence (Chakravarthy et al., 2012).

Prescription Drug Monitoring Programs (PDMPs) were developed by the law enforcement community to identify patterns of drug misuse, diversion, or excessive prescribing (Hildebran et al., 2014). These PDMPs are increasingly gaining recognition in the healthcare community as a tool that can aid providers in identifying patients who are at risk of harm from

prescription drug abuse, as well as helping to identify potential sources of drug diversion (Hildebran et al., 2014). The White House Office of National Drug Control Policy, the CDC, and the Food and Drug Administration have realized the potential of these programs and are currently suggesting that state-based PDMPs be expanded (Perrone & Nelson, 2012). While the potential benefits of PDMPs are beginning to be realized, they remain underutilized due to inadequate funding, variable levels of functionality, and inconsistent use (Perrone et al., 2012). Thus far there is very little knowledge about clinicians' experiences with, perceptions of, or attitudes toward PDMP systems (Hildebran et al., 2014). Additional information about how clinicians integrate the state's PDMP into their daily clinical workflow could help identify "best practices" regarding PDMPs and help guide their development in ways that best suit prescribers' needs (Hildebran et al., 2014). Little research has explored how APRNs are using PDMPs, how the information impacts patient care and diversion, and if APRNs think PDMPs are easy to use and add value to their practice (LeMire, Martner, & Rising, 2012).

Relevance to Alaska Advanced Nurse Practitioners

Prescription drug abuse has been noted to be more concentrated in states that have a high number of individuals living in rural communities, such as Kentucky, West Virginia, Alaska, and Oklahoma (Keyes et al., 2014). Many counties outside of urban regions have been found to have higher rates of overdoses related to OPRs, higher injury rates related to OPRs, and higher ratios of nonmedical to medical users of OPRs (Keyes et al., 2014). In addition, adolescents in rural communities have been found more likely to abuse OPRs recreationally when compared to their metropolitan counterparts (Keyes et al., 2014). These are concerning facts given most of Alaska is considered rural.

There are several unique factors associated with increased OPR consumption in rural regions. It has been well documented that geographical poverty and unemployment increases the occurrence of drug abuse in an area (Keyes et al., 2014). Large scale economic downturns affect rural areas of the U.S. more severely, resulting in widespread unemployment and increased poverty (Keyes et al., 2014). Areas that have a mining and heavy labor as the predominate industry have been shown to dispense far greater amounts of prescription narcotics in an effort to maintain a functional workforce (Keyes et al., 2014). This is closely related to the evidence that chronic pain and injury are more prevalent in rural regions (Keyes et al., 2014).

There is growing evidence that many misused OPRs are obtained from family, friends, or acquaintances who originally obtained the medication through legitimate channels (Keyes et al., 2014). Since family structures in rural areas are larger and tend to develop wider networks, there are potentially a greater number of avenues available to secure illicit narcotics (Keyes et al., 2014). All of these factors combine to create a situation where high prescription rates result in increased availability of OPRs in these regions (Keyes et al., 2014).

Alaska ranked 26th in the purchases of Oxycodone products in 2011, but ranks 47th in total population (Office of National Drug Control Policy, 2011). In 2008 Alaska ranked 5th in the nation with 18.1 drug overdose deaths per 100,000 population (CDC, 2011). Of particular relevance was that the highest rates of overdose deaths in 2008 was seen in non-Hispanics and American Indians/ Alaska Natives, nearly three times greater than Hispanics and blacks (Chakravarthy et al., 2012).

Purpose

The purpose of this project was to describe Alaskan NPs current practice regarding the Alaska Prescription Drug Monitoring Program, and to identify barriers that may prevent or reduce the use of the program.

Literature Review

History of the Prescription Drug Monitoring Program

PDMPs were originally implemented by law enforcement agencies in an attempt to identify patterns of diversion, misuse, and over prescribing (Hildebran et al., 2014). Over time the PDMPs have become valuable tools for improving health care in communities and helping providers identify patients at risk of harm secondary to addiction or unsafe medication practices (Hildebran et al., 2014). As of December 2013, there were operational PDMPs in 48 states and the territory of Guam (Finklea, Sacco, & Bagalman, 2014). New Hampshire and the District of Columbia had legislation on the books but were yet to have operational programs, while Missouri was still attempting to pass legislation related to PDMPs (Finklea et al., 2014). That same year the Obama Administration presented the 2013 Prescription Drug Abuse Prevention Plan, which includes the monitoring of controlled substances with PDMPs as one of four major focuses (Gershman, Fass, & Popovici, 2014).

The average cost to implement a PDMP is $350,000, and the average annual operating expense is $500,000 (Finklea et al., 2014). In reality the annual operating costs are between $125,000 and $1 million, and depend on the size of the state, number of registered users, and the complexity of the PDMP program (University of Kentucky Institute for Pharmaceutical Outcomes and Policy, 2010). One variable related to expense is whether the system is reactive or proactive (Finklea et al., 2014). Most states have a reactive system that only provides data to

practitioners who log into the database and request information on an individual (Worley et al., 2012). Proactive systems are more complex and notify providers and pharmacies when a patient exceeds specified thresholds for concerns of doctor shopping, which is defined as visiting multiple physicians to obtain multiple prescriptions for illegal use or abuse (Worley et al., 2012). While proactive programs are more expensive, they have been shown to have a more substantial impact on diversion (Worley et al., 2012).

PDMPs can be invaluable tools in the effort to track consumers' usage of controlled substances, monitor geographical trends of use, and assist law enforcement in their efforts. Some PDMPs report in real time, but these programs are expensive to operate. As such, most PDMPs have some delay in reporting and are best used to evaluate an individual's prescription patterns over time, as opposed to looking for recent transactions in the preceding week (Baehren et al., 2010). At present, Alaska requires that pharmacies report to the PDMP by the 5th of the following month (B. Howes, personal communication, January 15, 2015). Accessing the PDMP can inform a provider if the patient has utilized several different providers for OPRs, raising the suspicion that the patient may be engaging in doctor shopping, or visiting multiple providers to obtain multiple prescriptions (Islam & McRae, 2014). At the same time, the prescriber may identify a patient who has a legitimate need for pain medications, but is at risk of complications from polypharmacy due to multiple providers attempting to assist the patient with pain management (Islam et al., 2014). Also, accessing the PDMP may provide a certain level of comfort that the patient is adhering to a pain management contract, allowing the provider to forgo urine screening in effort to develop or enhance the patient-provider relationship (Islam et al., 2014). Having an awareness of the PDMP may provide an incentive for the patients to be forthright with their history, also helping foster open communication during the visit (Islam et

al., 2014). Data suggests that OPR overdoses often occur in high dose users who seek treatment from multiple providers, and accessing the database can help practitioners to intervene in a timely fashion by identifying the pattern earlier (Islam et al., 2014; Paulozzi et al., 2012). Lastly, some clinicians utilize the PDMP to ensure there are no false prescriptions under their name, and to coordinate care with other providers when there is a concern (Hildebran et al., 2014).

On a larger scale, the PDMP can be utilized to identify geographical areas that have the highest rates of misuse so that focused interventions can be aimed at these communities (Islam et al., 2014). For example, death rates secondary to OPRs varied from 1.8 to 15.6 per 100,000, with rural and impoverished counties having higher rates of overdose death (CDC, 2011). These areas of concern can be identified and unique interventions specific to that region can be implemented. States also have the authority to track and regulate medical practices in their area, and the information gleaned from the PDMP can help determine factors driving high prescribing rates and guide regulations to curb the growth of OPR prescribing (Paulozzi et al., 2014). These governing agencies can then use the PDMP to track the effects of their interventions (Paulozzi et al., 2014). For example, New York and Tennessee mandated provider use of the PDMP and then used the PDMP to reveal respectively a 75% and 36% decline in multiple prescribers (Paulozzi et al., 2014).

Since the PDMPs were originated by law enforcement agencies it is no surprise they continue to utilize them in their investigations. Some areas of focus for law enforcement include targeting providers who overprescribe controlled substance for drug dealers and abusers, pursuing pharmacies that falsify documentation, and identifying individuals that forge prescriptions (Finklea et al., 2014). In 2010, 3% of physicians were responsible for prescribing 62% of all OPRs dispensed (CDC, 2011). In the same year 90 of the top 100 oxycodone

prescribing physicians were found to be practicing in Florida (Islam et al., 2014). Using PDMP data to identify patterns of prescribing, law enforcement agencies reduced the number of over prescribers in Florida to thirteen (Islam et al., 2014).

The Alaska PDMP is run by the Alaska Board of Pharmacy and became operational in 2012, it currently costs between $65,000- $70,000 annually to operate (B. Howes, personal communication, January 15, 2015). All schedule II- V drugs dispensed are reported to the PDMP by 5th of every month, and query generated reports include all of these scheduled drugs dispensed over the previous two years (B. Howes, personal communication, January 15, 2015). Twenty-one states have enacted legislation requiring out of state, mail order, and Internet pharmacies to report medications dispensed to residents to the state PDMP and Alaska is one of them (Finklea et al., 2014). Despite the lack of advertisement, there are currently approximately 13,000 providers enrolled in the program (B. Howes, personal communication, January 15, 2015). No information is available on the number of active users or the number of times providers access the system in a given time period.

At present, federally funded programs, such as Indian Health Services (IHS), Department of Defense (DOD), and the Department of Veteran Affairs (VA), are exempted from reporting to the PDMP in the state in which they are located (Hildebran et al., 2014). One of the goals of the Executive office is to encourage these facilities to report all controlled substance prescriptions that are dispensed to the PDMPs of the states in which they operate (Executive Office, 2011). There will also be recommendations that encourage the DOD, VA, and IHS to develop and implement standards for having providers review the PDMP prior to generating a prescription for narcotics (Executive Office, 2011). The IHS healthcare community in Alaska has already begun

the process of reporting to the PDMP, but JBER and VA pharmacies still do not (B. Howes, personal communication, January 15, 2015).

America's Youth

A particularly alarming trend is developing in America's youth, where the use of medications for nonmedicinal purposes has become a serious problem in high school and college populations (Shepherd, 2014; Wang et al., 2009). The 2010 *Monitoring the Future* study discovered that six of the top ten substances used by high school seniors were prescription medications (Office of National Drug Control Policy, 2011). At that time nearly 12 million children age 12 or older reported the use of prescription pain killers for nonmedical reasons within the last year (Garcia, 2013). In 2011, 61% of young adults surveyed admitted to using OPRs or stimulants at some point in their lifetime (Lord, Brevard, & Budman, 2011). Amongst high school and college aged individuals pharmaceuticals are now third, behind marijuana and alcohol, in terms of substance use (Strogner, Sanders, & Miller, 2014). Unfortunately, adolescents perceive OPRs as more harmful than other prescription drugs but less harmful than almost all other drugs, except experimental alcohol and marijuana use (Keyes et al., 2014).

The decrease in the availability of illicit narcotics and increase in supply of OPRs has shifted public demand and has generated a street market. While the home prescription cabinet remains a source for narcotics, drug dealers are becoming a more popular source for OPRs for adolescents (Inciardi, Surratt, Cicero, & Beard, 2009). In a study of Delaware 11th graders, over 70% admitted to obtaining prescription drugs from street dealers (Inciardi et al., 2009). Another study looking at 10 to 18 year olds in Detroit public schools noted the most common avenue of obtaining prescription drugs was through a street level drug dealer (Boyd, McCabe, & Teter, 2006). There is also emerging data that indicates a portion of college students use a dealer to

obtain their prescription drugs (Rigg, Kurtz, & Surratt, 2012). Some experts contend that the war on drugs has resulted in tighter control of street drugs, leading more teenagers to turn to prescription medications (Wang et al., 2009).

Increase in Opiate Related Overdoses

There has been such an increase in the death rates from OPRs that it has been declared an epidemic in the U. S. (CDC, 2011). Since 2003 there have been more overdose deaths related to OPRs than heroin and cocaine combined (Paulozzi, 2012). In 2007, there were a reported 27,000 unintentional drug overdose deaths in the U.S. (Paulozzi et al., 2012). By 2008 there were 36,450 deaths related to OPR, nearing the leading cause of injury death in the U.S., which was motor vehicle collisions at 39,973 (CDC, 2011). For every overdose death there are several other less lethal encounters with OPR abusers, such as nine admissions for substance abuse treatment, 35 emergency room (E.R.) visits, and 161 reports of drug abuse/ dependence (Paulozzi et al., 2012).

Of particular importance to the healthcare provider is the fact that nearly all of the OPRs involved in overdose deaths were originally prescribed by a provider (Finklea et al., 2014). It has been found that long acting and extended release OPRs are more prone to abuse and deserve special attention as high dose formulations of these medications are far more likely to result in overdose (Paulozzi et al., 2014). Also, benzodiazepine and OPRs, when taken in combination, increase the risk for overdose, yet these are commonly prescribed together by some providers (Paulozzi et al., 2014).

A Growing Concern for Women

The increase in E.R. visits is possibly related to the fact that women are more likely to be prescribed OPRs than men, receive higher doses of OPRs, and use them chronically (CDC, 2013). This has led to an increase in the death rate from OPRs amongst women. Between 1999

and 2010, there has been a fivefold increase in the number of deaths in women that were attributed to OPRs (CDC, 2013). While men continue to have a greater total number of deaths from overdose, the overall percentage of increase in women is greater (CDC, 2013). In 2007, more women died from drug overdose each year than from the leading cause of avoidable injury, motor vehicle collisions. Additionally, since 2010 four times as many women died from overdose than were victims of homicide (CDC, 2013). The highest rates of death from overdose have been noted in ages 45 to 54 years old with 21.8 per 100,000 populations (CDC, 2013).

Increase in Deception and Diversion

The DEA has estimated that diversion is a $25 billion a year industry (Rigg et al., 2012). The term 'disorganized crime' is used by many to describe the mysterious complexity of the prescription medication diversion problem in society today (Rigg et al., 2012). Drug diversion involves the removal of drugs from legal marketplaces and distributing them in illegal ones (Gugelmann, Perrone, & Nelson, 2012). This includes the distribution of drugs to friends or family, as well as the sale, theft, and forgery of prescriptions, prescription pads, and Drug Enforcement Agency (DEA) numbers (Gugelmann et al., 2012).

Diversion of pharmaceuticals can take on many forms. Some common techniques for obtaining OPRs were pain clinic shopping, buying prescriptions, sponsoring, and using an inside 'connect' (Rigg et al., 2012). From a provider standpoint, the primary methods to obtain drugs for diversion are doctor shopping, manipulation or deception of providers, and stolen or forged prescriptions (Baehren et al., 2010). The Department of Justice confirmed this in a report to the Government Accountability Office (GAO) when they stated that doctor shopping is the primary manner in which individuals obtain OPRs for illegitimate use (U.S GAO, 2013). After obtaining a prescription, some patients will reserve a portion of their drugs with the intent to sell, give

away, or use for recreational purposes (Stogner et al., 2014). Some 76% of recreational OPR users reported receiving their drugs from their friends, family, drug dealers, or strangers (Paulozzi et al., 2012). An additional 20% of users stated they acquired OPRs from their own doctor or from more than one provider (Griggs, Weiner, & Feldman, 2015).

While some diversion is small and may go undetected, there are some impressive examples in the literature. In a report to the GAO it was noted that 600 Medicare patients had received prescriptions from 21 to 87 different practitioners, leading the organization to conclude that the patients were supporting an addiction or diverting medications (U.S. GAO, 2013). A more specific example involved a beneficiary in Maryland who received a total of 5923 oxycodone tablets, a 1,450 day supply, from 11 different prescribers (U.S. GAO, 2013). One physician caring for the patient reported that the beneficiary had a pain management contract stating that he would only receive narcotics from their sole provider (U.S. GAO, 2013).

Women are a particular subgroup of doctor shoppers, as they are more likely to engage in doctor shopping than men (CDC, 2013). Women were noted to employ elaborate measures to elude identification and deceive the system (Worley & Thomas, 2014). To negate the providers' attempts to detect abuse they worked together sharing pills for pill counts, trading urine for routine drug screening, and exchanging x-rays or MRIs (Worley et al., 2014). Some went as far as sponsoring others and providing rides to and from appointments (Worley et al., 2014). The women also discussed manipulating providers as they attempted to con them into writing prescriptions for the medications they sought (Worley et al., 2014). To bait a practitioner the women would exaggerate or fabricate symptoms such as pain and anxiety while denying the fact that another provider had provided them with prescriptions previously (Worley et al., 2014). In

many instances the women were successful doctor shoppers because the provider failed to take even the simplest measure to prevent it, such as checking the state's PDMP (Worley et al., 2014).

Opposing Viewpoint

Some are concerned of the potential for chilling effects or substitution effects. The chilling effect refers to the reluctance of some providers to prescribe controlled substances due to fear of retribution (Goodin, Blumenschein, Freeman, & Talbert, 2012). High profile criminal prosecutions can inhibit a practitioner from prescribing OPRs, as it causes concern they will be the target of scrutiny from law enforcement or their licensing bodies (Finklea et al., 2014; Goodin et al., 2012). The substitution effect is prescribing alternative, non-controlled medications, even if they have inferior effectiveness or a greater side effect profile (Islam et al., 2014). This was seen when only schedule II medications were being recorded and there was a temporary increase in hydrocodone prescriptions (Paulozzi, Kilbourne, & Desai, 2011). This can be dangerous as many of these formulations contain acetaminophen and increase the potential of hepatic failure resulting from acetaminophen poisoning (Paulozzi et al., 2011). However, abuse of OPRs is a major public health issue and these concerns can be largely mitigated if clear, concise standards of practice are adhered to. Furthermore, the first response to questionable practices should be undertaken by governing healthcare bodies prior to being passed on to law enforcement agencies (Islam et al., 2014). A 2009 study found that while there was an improvement in outcomes after the implementation of the PDMP, there continued to be a significant rise in OPR shipments between dispelling the notion that PDMPs have a chilling effect on prescribing practices (Reisman et al., 2009).

Initially these programs may consume more of a provider's already scarce time (Islam et al., 2014). Taking additional time to review the PDMP may increase wait times and negatively

influence the patients rating of their visit (Hildebran et al., 2014). Providers are also concerned that utilizing the PDMP may result in decreased patient satisfaction scores. When a provider is concerned for abuse there should be subsequent questioning, counseling, and possible referral for treatment, all consuming more of the practitioners time (Islam et al., 204). Prescribers who opt to not prescribe OPRs secondary to concerns for abuse are faced with another scenario in which they are likely to have increased dissatisfaction scores (Hildebran et al., 2014). This is significant because negative scores can have a serious impact on a provider's reimbursement and job security (Islam et al., 2014). For most ethical providers these concerns would be largely outweighed by a desire to provide high quality healthcare and prevent negative long term health consequences in their clientele.

PDMP Effectiveness

Thus far the theoretical benefits of PDMPs have been well cataloged but scarcely studied (Gugelmann et al., 2012). Research that focused on the PDMPs effects on OPR abuse that were completed prior to 2008 had mixed results (Griggs et al., 2015). During that time period PDMP databases were primarily utilized by narcotic control agencies to assist in identification and investigation of those engaged in illegal activities, not as healthcare resources (Guoha, Brady, Lang, Giglo, Wunsch, & DiMaggio, 2014). Several unique data collection points made it difficult to compare state to state. Some of these confounding factors included the schedules of medications that were reported, who was required to report data, how often the data was submitted, who was allowed access to the database, and whether there was interstate sharing of information (Garcia, 2013). PDMP programs were also less advanced at that time. Eight of the PDMPs that were studied stated that reports were made available within one hour of request, thereby limiting the providers' ability to make an intervention at the time of presentation (Wang

et al., 2009). Results related to overdose deaths were also influenced by who recorded the data during the death investigation. In states where deaths from injury were investigated by a medical examiner there was a significantly higher report of overdose mortality when compared to the states that utilized coroners (Guoha et al., 2014). Finally, most of the studies did not distinguish between proactive and reactive programs (Finklea et al., 2014).

Even today there is limited research relating to the effectiveness of PDMPs (Finklea et al., 2014). However, there are factors that have been attributed to this lack of effectiveness of PDMPs on overdose mortality. Foremost is the markedly limited use of PDMPs by all providers mainly due to real and perceived barriers related to access (Guoha et al., 2014). Inadequate provider training and lack of incentives have resulted in decreased buy-in from prescribers (Guoha et al., 2014). A lack of interstate sharing can result in a provider only seeing a limited view of a patient's prescription history, especially in border towns (Guoha et al., 2014). Surprisingly, only 22 of the states currently require a customer to present photo identification prior to receiving a scheduled medication, thereby allowing doctor shoppers to elude detection (Griggs et al., 2015). However, since their inception PDMPs have made substantial technological advances and developed into Internet based platforms thereby surmounting many these historical hurdles (Perrone et al., 2012).

Evidence that PDMPs are making a difference is beginning to emerge. In 2009, PDMP states were found to have a lower per capita shipment of oxycodone, a lower percent increase in opioid related admissions, and a lower ratio of patients entering treatment for OPRs (Reisman et al., 2009). Not only did PDMP states have a lower incidence of admissions related to OPRs, but the gap continued to widen with each successive year studied (Reisman et al., 2009). Furthermore, eight of the ten states with the highest number of OxyContin prescriptions did not

have PDMPs, while six of the ten lowest states had implemented PDMPs (Office of National Drug Control Policy, 2011). In 2012, the Researched Abuse, Diversion and Addiction-Related Surveillance (RADARS) System, Poison Control Center, and Opioid Treatment Programs voiced their agreement that PDMPs have been shown to decrease OPR misuse in the general population (Reifler et al., 2012). In the most recent data available from the CDC, overdose deaths related to OPRs fell 5% between 2011 and 2012, marking the first decrease in over a decade (Griggs et al., 2015).

PDMPs can also influence a provider's prescribing patterns. Interestingly, 91% of the physicians who accessed the PDMP did so because of concern for prescription drug abuse (Gershman et al., 2014). Of those that accessed the system, 93.6% of physicians reported the information gleaned influenced the type or quantity of the medication that was ultimately prescribed (Gershman et al., 2014). This resulted in nearly 68% of the physicians switching to a nonscheduled pain reliever, while another 30% were less concerned about prescribing OPRs after reviewing the PDMP (Gershman et al., 2014). A study of medical toxicologists, who primary work in E.R.s, were found to have a more equitable split with nearly equal numbers of OPR prescriptions changing in both directions (Perrone et al., 2012). Another study of ER providers found that reviewing the PDMP resulted in a relatively small number of changes, but changes occurred in both directions with more than twice as many patients receiving a prescription that was not previously planned (Weiner et al., 2013). Another study of Ohio providers found that OPR prescribing changed in 41% of the cases after the PDMP was reviewed (Baehren et al., 2010). Of those cases, 61% received fewer OPRs than was originally intended and 39% received more pain medication than was originally planned (Baehren et al., 2010).

Significance to Nurse Practitioners

As primary care providers, NPs are at the front line of a growing prescription drug abuse problem. In many states, NPs have a wide scope of practice and manage patients independently; as a result they prescribe a similar number of controlled substances as their counterparts in the primary care arena (Cipher, Hooker, & Guerra, 2006). NPs are also similar to other providers in the frequency at which they prescribe controlled substances; while physicians prescribed a controlled substance 12.4% of the time, physician assistants wrote narcotic prescriptions 12.3% of the time, and NPs did so in 11% of their visits (Cipher et al., 2006). As providers, NPs have legal and ethical obligations to identify individuals at risk and intervene in an effort to promote patient safety and be responsible prescribers (Worley et al., 2014). Therefore, PDMPs may be beneficial to help identify potential problems in their practice (LeMire et al., 2012). Furthermore, the PDMP provides the NP with an opportunity to intervene early during the initial stages of a potential problem, while the patient is still in the clinical setting (Perrone et al., 2012).

The use of PDMPs is becoming more prevalent in the evidence-based practice for pain management literature. American Family Physicians Journal recommends that providers, including nurse practitioners, check the PDMP during the decision making phase of prescribing OPRs, and that ongoing monitoring should include regular surveillance of data from the state PDMP (Berland & Rodgers, 2012). The Institute for Clinical Systems Improvement encourages prescribers to routinely use tools, including the use of a centralized database, to identify and monitor usage in patients that are receiving scheduled medications (Hooten et al., 2013). Finally, the American Academy of Pain Medicine recommends that monitoring compliance with chronic opioids prescriptions should include random urine drug screening, pill counts, and periodic

review of prescription monitoring data base reports (American Academy of Pain Medicine, 2013).

Purpose Statement and Research Questions

The purpose of this project is to identify the barriers that may prevent Alaskan NPs from utilizing the PDMP as well as barriers to enrolling in the PDMP for nonusers. This data will serve as a starting point for understanding the barriers Alaska NPs face in regards to PDMP enrollment and use. Ideally, this will allow the Alaska PDMP to implement targeted education, thus decreasing barriers and increasing use of the program amongst Alaska NPs. The following research questions will be addressed:

1. Who are the primary users and nonusers of the PDMP?
2. What are the prescribing patterns of users and nonusers?
3. What are the perceived barriers to use in regards to the Alaska PDMP?
4. What are the perceived barriers to enrollment by nonusers?
5. What would make the PDMP easier to use?
6. What would make the PDMP more useful in daily practice?

Methods

Design

This project was performed using a quantitative descriptive design. An eleven question survey was used for data collection: the first question established prior knowledge of the PDMP, followed by five multiple choice Likert scale questions with open-ended space for additional comments, and finally five questions regarding demographics made up the questionnaire. The final questionnaire used in this study required less than 10 minutes to complete.

Instrument

The original surveys were developed by Jessica M. Irvine, Sarah E. Hallvik, Christi Hildebran, Miguel Marino, Todd Beran, and Richard A. Deyo (Irvine, 2014). The authors of the survey developed the questionnaire based on current gaps in the literature, input from state program experts, clinical experts, an earlier and smaller state survey, and focus groups with clinicians from nine other states who were active users of their states' PDMPs (Irvine, 2014). There was no mention of reliability testing and only a description of content validity by the original authors of the questionnaire. The principal author's permission to use the questionnaire and modify as needed was received via email conversation (Appendix C).

Minor changes were made to the survey in order to adapt the survey to NPs practicing in Alaska. Additional questions were added asking NPs to score their thoughts regarding loss of business and poor satisfaction scores being seen as a barrier to PDMP use. An additional demographic question was added asking providers if they practiced in urban, rural road, or rural off road environments which are specifics related to living and practicing in Alaska. Additional minor modifications to the questionnaire were made following recommendation from committee members and University of Alaska School of Nursing faculty.

Sampling

The intended sampling frame included exclusively Advanced Nurse Practitioners practicing in Alaska. First, the professional license database was downloaded from the State of Alaska Department of Commerce, Community, and Economic Development website. Since the aim of this study was to look at Nurse Practitioners who work in Alaska, and therefore may use the Alaska PDMP, all out of state addresses were eliminated from the mailing list. Ultimately, 635 clinicians were eligible to participate in this study.

A preemptive postcard was mailed on January 13, 2016 two weeks prior to the questionnaire mailing in an attempt to raise awareness and improve the response rate. The author then prepared hand addressed envelopes, also in an attempt to increase return rates. Included in the mailing was an introduction letter that explained the survey and the implied consent, as well as a self-addressed, stamped envelope for the return of the survey. The author then mailed the surveys on January 25, 2016. Data was collected over a three- week period and resulted in 204 questionnaires being included in the analysis.

Rights and Protection of Human Subjects

The Institutional Review Board (IRB) at the University of Alaska Anchorage approved the project. A cover letter explaining the project to potential respondents was included with every mailing (Appendix A). Clinicians gave their consent to participate in the study by completing and returning the survey. There was no identifying information on the surveys other than basic demographic information. All questionnaires and data files were only available to the principal investigator, committee chair, and committee member. The anonymous paper questionnaires were saved in a locked filing cabinet and the compiled data was saved on a password protected external hard drive secured in the same locked filing cabinet.

Results

Analysis

Analysis of the data was performed using SPSS version 23 in order to complete demographic statistics. All responses were converted to a numeric score for data entry. Answers to the open-ended questions were entered into SPSS as they were written by the respondent, and were analyzed to identify any recurring themes within the responses by using inductive content analysis as described by Elo and Kyngas (2007). Respondents were asked demographic

questions in regards to age, gender, years practicing as a NP, specialty of practice, and practice setting. Demographic information regarding years of practice was collected via an open-ended question and was later grouped into five year categories which resulted in eight groups. The respondents' area of practice was also combined into categories to facilitate comparisons and resulted in: Family Practice, Women's Health, Midwifery/ OBGYN, Mental Health/ Psychiatry, Pediatrics, Specialty Clinic, and Other groupings. Where appropriate, chi-square tests were used to determine statistical differences between groups.

Respondents

A total of 635 questionnaires were mailed, after removing 32 questionnaires that were returned as undeliverable the total number of potential respondents was 603. A total of 217 surveys were returned. Six of these surveys were excluded because the ANPs stated they were retired, and therefore did not complete the survey in its entirety. An additional seven surveys were excluded because the majority of the survey was incomplete and there was no demographic information. This left 204 valid surveys for a 33.8% response rate.

The vast majority of respondents were female (95.1%, n = 194), while 4.4% were male (n = 9), and one respondent did not list a gender (Table 1). The majority of respondents were ages 50 to 59 years (34.8%, n = 71), followed by age 60 years or older (29.4%, n = 60), ages 30 to 39 years (17.6%, n = 36), ages 40 to 49 years (15.7%, n = 32), and under age 30 years (2.5%, n = 5). After the specialty of practice category was combined, most respondents listed themselves as Family Practice 46.1% (n = 94), followed by 17.6% (n = 36) declaring their primary employment as a Specialty Clinic. Other specialties were: Women's Health, 10.8% (n = 22); Mental Health/ Psychiatry, 10.8% (n = 22); Midwifery/ OBGYN, 5.4% (n = 11), other 5.4% (n = 11); and Pediatrics, 4% (n = 8). Years of experience as a NP ranged from 1 to 40 years.

After combining years of experience into five year groups the most frequent responses were 0 to 5 years 22.1% (*n* = 45) along with 16 to 20 years 22.1% (*n* = 45). Regarding location of practice, urban providers represented the majority (64.2%, *n* = 131), while 26.5% (*n* = 54) reported their area of practice as rural, and only 8.8% reported a rural location off the road system (*n* = 18). The Alaska Board of Nursing does not consider demographic information public record, so the age and gender mix of nurse practitioner respondents may not be demographically representative of the Alaska NP population.

Table 1.

Demographic Characteristics of Respondents According to PDMP User Status

Demographic	All Respondents *n* (%)	Registered Users *n* (%)	Nonusers *n* (%)
	204 (100)	98 (48)	106 (52)
Age category			
<30	5 (2.5)	2 (2)	3 (2.8)
30 to 39	36 (17.6)	16 (16.3)	20 (18.9)
40 to 49	32 (15.7)	21 (21.4)	11 (10.4)
50 to 59	71 (34.8)	30 (30.6)	41 (38.7)
≥60	60 (29.4)	29 (29.6)	31 (29.2)
Gender			
Female	194 (95.1)	93 (94.9)	101 (95.2)
Male	9 (4.4)	5 (5.1)	4 (3.8)
Years of practice			
0 to 5	45 (22.1)	20 (20.4)	25 (23.6)
6 to 10	34 (16.7)	15 (15.3)	19 (17.9)
11 to 15	38 (18.6)	24 (24.5)	14 (13.2)
16 to 20	45 (22.1)	23 (23.5)	22 (20.8)
21 to 25	12 (5.9)	3 (3.1)	9 (8.5)
26 to 30	12 (5.9)	3 (3.1)	9 (8.5)
31 to 35	11 (5.4)	7 (7.1)	4 (3.8)
36 to 40	5 (2.5)	2 (2)	3 (2.8)
Specialty of practice			
Family Practice	94 (46.1)	56 (57.1)	38 (35.8)
Specialty Clinic	36 (17.6)	20 (20.4)	16 (15.1)
Women's health	22 (10.8)	3 (3.1)	19 (17.9)
Mental Health/ Psychiatry	22 (10.8)	14 (14.1)	8 (7.5)
Midwifery/ OBGYN	11 (5.4)	2 (2)	9 (8.5)
Pediatrics	8 (3.9)	0	8 (7.5)
Other	11 (5.4)	3 (3.1)	8 (7.5)
Area of practice			
Urban	131 (64.2)	64 (65.3)	67 (63.2)
Rural	54 (26.5)	16 (16.3)	28 (26.4)
Rural off road	18 (8.8)	8 (8.2)	10 (9.4)

Comparison of Registered Users versus Nonusers

Demographics

Age. When comparing users to nonusers, respondents ages 40 to 49 years were 31.2% more likely to be enrolled in the PDMP (Figure 1). A chi-square test of independence was performed to examine the relation between user status and age. The relation between these variables was not significant, X^2 (4, N = 204) = 5.235, p=.264. There was no significant difference when comparing groups based on age.

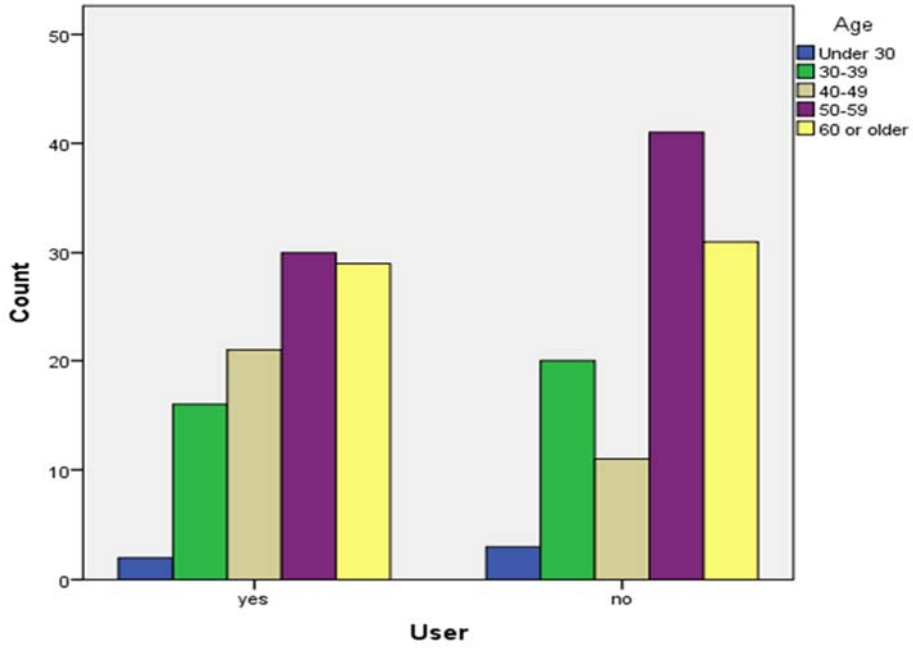

Figure 1. Age of respondents by user status.

Gender. A chi-square test of independence was performed to examine the relation between user status and age. The relation between these variables was not significant, X^2 (1, N = 203) = .200, p=.655. There was no significant difference when comparing groups based on gender.

Years practicing as a Nurse Practitioner. Respondents with 11 to 15 years of experience were 26.4% more likely to be enrolled in the PDMP (Figure 2). Also of note was that NPs with 31 to 35 years of experience were 29.2% more likely to be users of the PDMP, while NPs with 21 to 25 and 26 to 30 years of experience were 50% more likely to not be enrolled in the program. However, all groups with 21 years of experience or greater had 12 or less respondents. A chi-square test of independence was performed to examine the relation between user status and years of experience as a NP. The relation between these variables was not significant, X^2 (7, N = 202) = 10.398, p=.167. There was no significant difference when comparing groups based on years of experience.

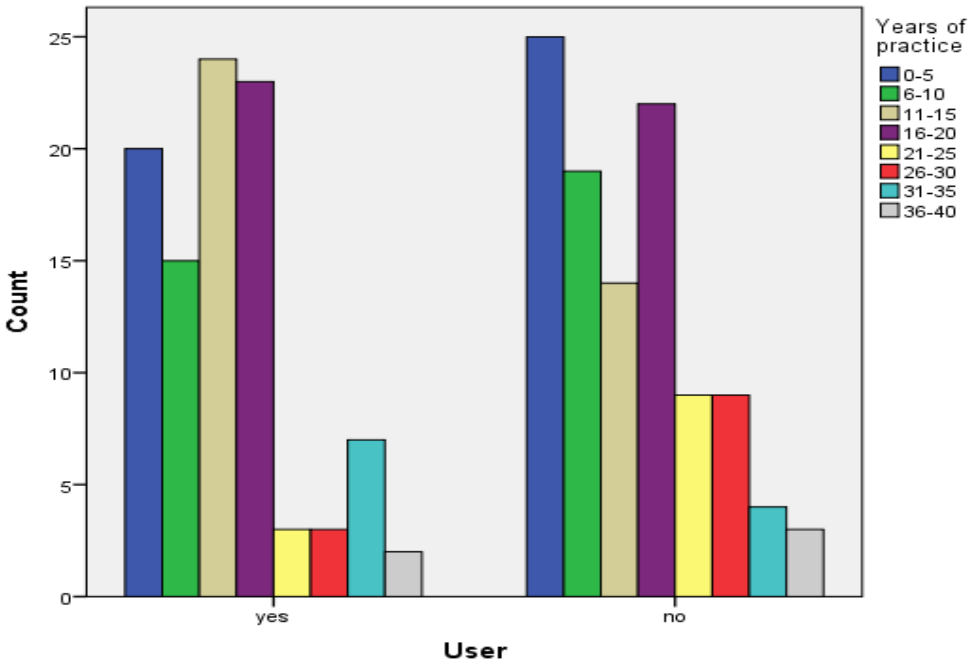

Figure 2. Years of experience of respondents by user status.

Specialty. Family Practice and Mental Health/ Psychiatry were heavily represented in the user group in this survey (Figure 3). In contrast, Pediatrics, Women's Health, and Midwifery/ OBGYN were more heavily represented in the nonuser group of the survey. No practitioners practicing in pediatrics reported being enrolled in the PDMP (0%, n = 8). Prior to combining

specialty of practice into categories it was noted that 100% (n = 6) of pain management NPs reported being enrolled in the program. Also, there were relatively few respondents who practiced in the inpatient environment. A chi-square test of independence was performed to examine the relation between user status and specialty of practice. The relation between these variables was significant, X^2 (6, N = 204) = 31.626, p=<.001. There was a significant difference when comparing groups based on specialty of practice.

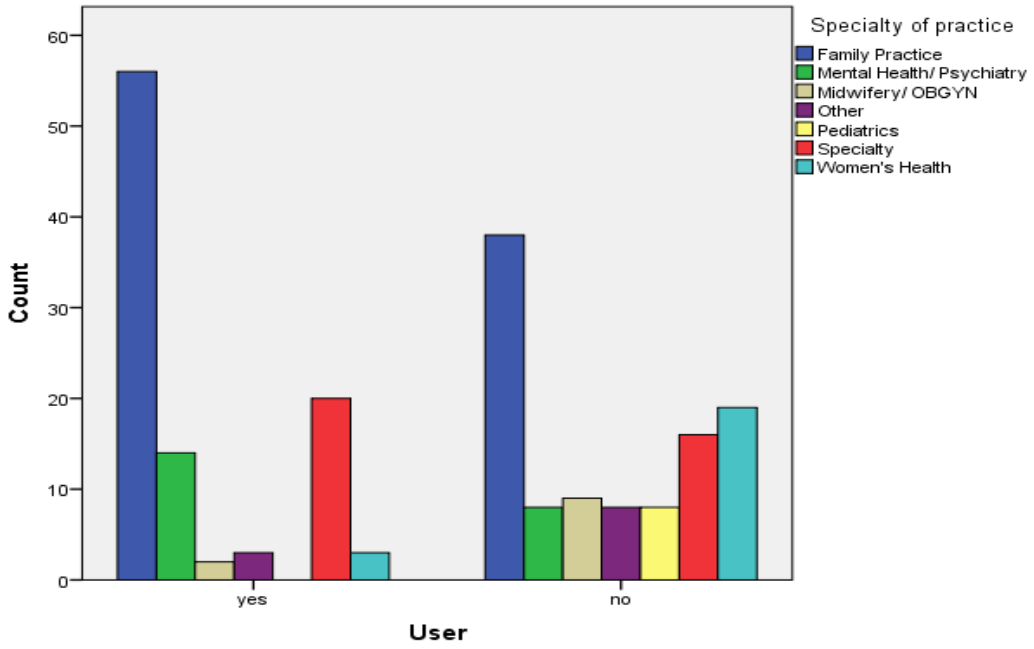

Figure 3. Specialty of practice by user status

Predominant area of practice. A chi-square test of independence was performed to examine the relation between user status and area of practice, which was defined as urban, rural, or rural off road. The relation between these variables was not significant, X^2 (2, N = 203) = .124, p=.940. There was no significant difference when comparing groups based on area of practice.

Prescribing Patterns

Registered NPs reported prescribing all classes of controlled substances more often than nonusers (Table 2). However, many of the non-registered NPs also reported frequently

prescribing controlled substances. Among the 106 nonusers in this study, 49.1% (*n* = 52) reported occasionally (1–5 times per week) or frequently (5 or more times per week) prescribing any class of controlled substance. A chi-square test of independence was performed to examine the relation between user status and prescribing habits. The relation between user status and each variable was significant, signifying that there was a significant difference when comparing groups.

Table 2.

Prescribing Habits According to PDMP User Status

Class of Controlled Substance	PDMP Registered Users *n* (%)	Nonusers *n* (%)	*p* value
Prescribe opioids at least weekly	58 (59.2)	33 (31.1)	<.001
Prescribe benzodiazepines at least weekly	56 (57.1)	29 (27.4)	<.001
Prescribe amphetamine-like drugs at least weekly	39 (39.8)	16 (15.1)	<.001
Prescribe sleep medications at least weekly	60 (61.2)	26 (24.5)	<.001

Barriers to Use by Registered Users

Registered users were provided with a list of concerns and asked to check which and to what extent each was a barrier to using the PDMP (Table 3). The NP's who were enrolled in the PDMP identified time constraints as the largest barrier to use with 66% (*n* = 64) finding it to be a somewhat or a significant barrier. Being unable to designate someone to access the system on the registrants' behalf had a mixed response, with 49.5% (*n* = 48) finding it to be a somewhat or a significant barrier. Enrolling in the program was also seen as a barrier by many, as the cumbersome registration process was cited as a somewhat or a significant barrier by 42.3% (*n* = 41). Areas that were not identified as a barrier to use or only rarely a barrier included: concerns related to loss of business (99%, *n* = 96), concerns related to poor patient satisfaction scores

(99%. *n* = 96), comfort using a computer or internet (96.9%, *n* = 94), concerns related to scrutiny by professional licensing board (95.9%, *n* = 93), concerns related to scrutiny by law enforcement (93.8%, *n* = 91), and lack of training (71.1%, *n* = 69).

In the free text area provided for respondents to enter other barriers, seven cited concerns with passwords, the password reset process, and password retrieval. Four individuals took the time to praise the system or state that there were no barriers. Finally, two other individuals remarked that it was not connected to their electronic health record (EHR), and this causes them lost time and difficulty researching a client as they are forced to navigate between two different programs.

Table 3.

Barriers to Use of the Alaska PDMP by Registered Users

Barrier to Use by Registered Users	Somewhat- Significant barrier	Not- Rarely a barrier
Time constraints to access PDMP during patient visits	64 (66.0)	33 (34)
I cannot designate someone to access the system on my behalf	48 (49.5)	46 (50.5)
Cumbersome registration process	41 (42.3)	56 (57.7)
Lack of training on how to access or use the PDMP	28 (28.9)	69 (71.1)
Concerns about scrutiny by law enforcement	6 (6.2)	91 (93.8)
Concerns about scrutiny by professional licensing board	4 (4.1)	93 (95.9)
Concerns related to poor patient satisfaction scores	3 (3.1)	94 (96.9)
Not comfortable using computer or Internet	1 (1)	96 (99)
Concerns for loss of business	1 (1)	96 (99)

Reasons Nonusers Have Yet to Register

There were a total of 106 Nonregistered individuals and 38 (35.8%) of this subgroup had never heard of the PDMP prior to receiving the questionnaire. Additionally, a full 55.7% (*n* = 59) of unregistered users were not aware that they could register (Table 4). A nearly equally

large percentage, 44.3% (*n* = 47), cited the reason for not registering was that they rarely prescribed controlled substances. In contrast, areas that were less cited as barriers to registering were: No Internet at work (3.8%, *n* = 4), object to surveillance (3.8%, *n* = 4), limited resources to do anything with the information (3.8%, *n* = 4), not allowed to share with staff (4.7%, *n* = 5), don't think there would be any benefit (11.3%, *n* = 12), and too busy (24.5%, *n* = 26).

In the free text area provided for respondents to enter other barriers, nine federal employees (Military and Indian Health Services) stated that they did not believe their computer systems would allow them to access an outside vendor or assumed that the pharmacist would provide surveillance. Five respondents were inpatient providers or serviced long term care or incarcerated clients and didn't feel that the PDMP would influence their prescribing patterns. Only one provider stated that she prescribed exclusively to their long term clients and that they knew them well enough to not be concerned.

Table 4.

Barriers to Registering for the Alaska PDMP by Non-Registered Users

Barrier to Registering	Rate *n* (%)
I'm not aware that I could register as a user	59 (55.7)
I rarely, if ever, prescribe controlled substances	47 (44.3)
I'm too busy	26 (24.5)
I don't think there would be any benefits	12 (11.3)
I'm not allowed to share the account with my support staff	5 (4.7)
There is no Internet access at work	4 (3.8)
I ethically and/or morally object to surveillance of patient medication habits / prescriptions	4 (3.8)
Limited funds/resources to do anything with the information returned (e.g., referral to substance abuse treatment)	4 (3.8)

Improving the Alaska PDMP

Making the PDMP Easier to Use

All participants were asked what would make the PDMP easier to use (Table 5). The most common response by all users was that they wanted to have generated reports sent to them when someone they prescribe for is suspected of misuse or diversion (64.2%, *n* = 131), but 72.4% (*n* = 71) of the user subgroup requested this change (p=.018). The majority felt that authorizing someone else to access the system on their behalf (50.5%, *n* = 103) would make the system easier to use. However, the user subgroup selected this option more frequently (61.2%, *n* = 60) compared to the nonuser subgroup (40.6%, *n* = 43) (p=.003).

User groups also differed in their desire to receive training on how to use the system, while 56.6% (*n* = 60) of all respondents declared a desire for training on the use of the system, only 31.6% (*n* = 31) of the user subgroup felt they needed training (p=<.001). Considering that time constraints were cited as an area of concern by both groups, surprisingly only 44.1% (*n* = 90) declared they thought training on how to incorporate accessing the PDMP into daily workflow would make the PDMP easier to use.

Table 5.

What Would Make the PDMP Easier to Use

	All respondents *n* (%)	Users *n* (%)	Nonusers *n* (%)	*p* value
Having the state send reports to me automatically when patient patterns suggest potential misuse or diversion	131 (64.2)	71 (72.4)	60 (56.6)	.018
Ability to authorize someone else to access system on my behalf	103 (50.5)	60 (61.2)	43 (40.6)	.003
Training on how to use the system	91 (44.6)	31 (31.6)	60 (56.6)	<.001
Training on how to incorporate PDMP into clinical workflow	90 (44.1)	45 (45.9)	45 (42.5)	.618

Making the PDMP More Useful in Clinical Practice

All providers were asked what would make the PDMP more useful in clinical practice (Table 6). At least 72% (*n* = 147) of clinicians thought that faster entry and display of prescriptions in a database would be somewhat or very useful. When looking at subgroups, 90.8% (*n* = 89) of users found this topic to be somewhat or very useful, whereas only 45.3% (*n* = 48) of non-users found it useful (p=<.001). User groups also differed when it came to their opinions on the usefulness of unique patient identifiers (p=<.001) and linking state PDMP systems (p=<.001). Respondents in both groups agreed that it would be somewhat or very useful to: receive training on resources that are available within the community 61.3% (*n* = 125) and receive training on communicating findings in a non- confrontational manner (52.5%, *n* = 107).

Table 6.

What Would Make the PDMP More Useful in Clinical Practice?

	All respondents *n* (%)	Users *n* (%)	Nonusers *n* (%)	*p* value
Faster entry and display of prescriptions in database	147 (72.1)	89 (90.8)	58 (54.7)	<.001
Linking state PDMP systems	136 (66.7)	81 (82.7)	55 (51.9)	<.001
Unique patient identifier to avoid mistaken identity or use of aliases	129 (63.2)	74 (75.5)	55 (51.9)	<.001
Training on how to respond to PDMP information/ resources available	125 (61.3)	69 (70.4)	56 (52.8)	.010
Training to communicate PDMP findings in non-confrontational manner	107 (52.5)	51 (52)	56 (52.8)	.910
Training on how to interpret the data	103 (50.5)	45 (45.9)	58 (54.7)	.209

Discussion

Among survey respondents, there was no significant difference between the PDMP users and nonusers in regards to age, gender, years of practice, or location of practice. There was a statistically significant difference amongst the two groups when compared by specialty of

practice. The PDMP appeared to be widely used by clinicians from many disciplines, especially those from Family Practice, Mental Health/ Psychiatry, and Pain Management. While Pediatric and Women's Health NPs were predominately nonusers of the program. No Pediatrics NPs in this survey were registered users, but also reported never prescribing opioids, benzodiazepines, or sleep aides and only occasionally prescribing amphetamine like medications. This pattern was seen in other specialties, as respondents who were not registered users of the PDMP were infrequent prescribers of controlled substances compared to their counterparts. However, nearly half of all nonusers reported prescribing at least one class of controlled substance weekly. Raising concerns that providers may underestimate the amount of controlled substances they prescribe.

Time constraints were the most commonly cited barrier to using the PDMP by those that are currently registered users. This was followed closely by not being able to designate someone to access the system on the provider's behalf, perhaps allowing a licensed staff member to access the PDMP would decrease the clinician's time burden and increase the use of the program. While not listed as a choice, many providers wrote in that they had difficulty with the password portion of the PDMP, and felt that an online retrieval system for a forgotten password would be beneficial.

Over half of all of nonusers reported that they were not aware they could register for the PDMP, indicating a need to increase education on the program. However, registered users found the registration process to be cumbersome and could indicate another area of improvement that could occur prior to attempting to recruit nonusers. Increased recruitment efforts may not be hugely successful, given that nearly half of unregistered providers feel that they rarely prescribe controlled substances. Amongst those who have yet to enroll in the PDMP, over half felt that

training on use of the system would improve the process, indicating that education on program usage is warranted for new users. A particular subgroup that could be targeted is NPs in the federal government systems, as they erroneously believe that the governmental computer systems will not allow them to access an outside vendor's program or that the pharmacist will provide oversight on their behalf.

Providers from both groups indicated a desire to have proactive reports sent to them whenever they prescribed medications to a patient with a pattern that is concerning for misuse or diversion. This may indicate that providers wish to have the information, but that time constraints may prevent them from investigating every patient. Clinicians also felt that faster entry and display of prescriptions would make the PDMP more useful in clinical practice.

Strengths and Limitations

Important strengths of the study include its statewide sampling, inclusion of PDMP nonusers, and identification of respondents' specialties. Few of the previous studies have addressed nonusers of the PDMP or identified respondents' specialty of practice. Additionally, this is the first survey of NPs in Alaska in regards to PDMP usage.

Several limitations of the study were identified. The survey used was not tested for reliability and was only tested for content validity. The survey response rate was suboptimal, and a low response rate has the potential of introducing a bias, as respondents may systematically differ from non-respondents in their demographics, clinical characteristics, or perceived barriers. As always, results from one state's population may not be generalizable to clinician populations in other states. Several specialty groups contained small sample sizes thereby making specialty comparisons difficult. As in any survey, social influences may create a bias, although this bias was potentially reduced by providing anonymity to the respondents.

Conclusions and Recommendations

Prescription drug monitoring programs are relatively new developments that can aide providers in delivering high quality care while helping to maintain safety and oversight. With The White House Office of National Drug Control Policy, the Centers for Disease Control and Prevention, and the Food and Drug Administration calling for an expansion of state-based PDMPs, these programs appear to be here to stay (Perrone et al., 2012). However, underutilization of these programs will continue to negate the potential benefits of these programs rendering them ineffective in the fight to reduce prescription drug misuse. Some states have recognized this as a problem, and as of October 2014, 22 states have passed legislation requiring that prescribers review the PDMP in certain scenarios (Griggs et al., 2015). While PDMPs are not a panacea for OPR misuse, they are a valuable tool available to practitioners as an attempt to curb the over prescribing of these drugs.

Now that the Alaska PDMP is well established, more attention is needed to maximize its exposure and incorporation into daily workflow if it is to achieve its full potential for reducing drug misuse and abuse while increasing patient safety. Future research should focus on identifying optimal strategies for reaching clinicians that are unaware of the existence of the PDMP or are unaware that they are eligible to enroll in the program. Additional consideration should be given to authorizing registered users to delegate authority to a licensed person on their staff to access the PDMP in an attempt to reduce time commitments and increase its usage. Steps should be taken to brief federal government employees on the program and encourage providers to take back responsibility for investigating their patients scheduled medication consumption patterns. In an attempt to provide new users with desired training, a brief video tutorial could be made available on the PDMP website detailing the basic usage of the program. Many providers

felt that assigning each individual a unique patient identifier could prevent consumers from filling prescriptions under aliases or using multiple addresses, which undermines the effectiveness of the PDMP. While an overwhelming majority of users want faster data entry and proactive reports, this could substantially raise the cost of the program and further study would be needed to evaluate the cost benefit ratio.

Dissemination Plan

An application for poster presentation at the Alaska NP Conference in September of 2016 was submitted for review. A copy of this project will be sent to Brian Howes at the Alaska PDMP for review and consideration. As this is currently a wide conversation in the news and medical literature I will attempt to have the results published in *The Journal for Nurse Practitioners*, the official publication of the American Association of Nurse Practitioners.

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Appendix A

Cover Letter

Alaska Nurse Practitioners Barriers of Use of Prescription Drug Monitoring Program

Researchers:
Heath Christianson, RN
Graduate Student, UAA School of Nursing
(907) 570-4353

Elizabeth Driscoll, PhD, FNP, RN
Faculty, UAA School of Nursing
(907) 786-4594

Description:
You are being asked to participate in a survey to explore barriers to the use of the State of Alaska's Prescription Drug Monitoring Program. You have been chosen to participate in this study because you have an active Alaska Nurse Practitioner license. Your name and address was obtained from public records available through the State of Alaska Department of Commerce, Community, and Economic Development.

Voluntary Nature of Participation:
Your participation in this project is voluntary. If you agree to participate, you may choose not to answer any given questions, and you may discontinue your participation at any time prior to returning the completed survey. Your informed consent is implied upon completion and return of the questionnaire.

Confidentiality:
Your responses to the survey will be confidential. Since all responses are intended to be anonymous, please do not write your name or address anywhere on the questionnaire or return envelope. Aggregated results will be stored in a computer with password protection, and deleted at the conclusion of this study. Returned paper copies of the survey will be stored in a locked file cabinet for three years, then destroyed.

Potential Benefits and Risks:
The questionnaire should take 5- 10 minutes to complete. In this project, there are no known economic, legal, physical, psychological, or social risks to participants in either immediate or long-range outcomes.

Compensation:
There is no compensation for your participation in this study. The results of the survey will be presented at Alaska Nurse Practitioner conference and the Alaska Board of Pharmacy.

Contacts:
If you have any questions about this project or the results please contact me, Heath Christianson; hchristianson@alaska.edu; 907-570-4353, or Dr. Elizabeth Driscoll; emdriscoll@uaa.alaska.edu; 907-786-4594, at the Department of Nursing, University of Alaska Anchorage. If you have any concerns about your participation in this study, please contact the UAA Research Integrity & Compliance Officer, (907) 786-1099.

Thank you for your time and cooperation.

Sincerely,

Heath Christianson
Elizabeth Driscoll

Appendix B

Questionnaire

Prescription Drug Monitoring Programs in Clinical Practice: A Survey of Alaskan Nurse Practitioners

1. Have you heard about the Prescription Drug Monitoring Program, also known as PDMP?
   - ☐ Yes
   - ☐ No

2. How often do you prescribe the following classes of drugs for your patients?	Never	I do rarely (1/month)	I do occasionally (1–5/week)	I do frequently (5+/week)
Opioids	☐	☐	☐	☐
Benzodiazepines	☐	☐	☐	☐
Amphetamine-like drugs	☐	☐	☐	☐
Sleep medications	☐	☐	☐	☐

3. If you are a registered user, to what extent are the following a barrier to your use of the PDMP?	Not a barrier	Rarely a barrier	Somewhat a barrier	Significant barrier
Lack of training on how to access or use the PDMP	☐	☐	☐	☐
Concerns about scrutiny by law enforcement	☐	☐	☐	☐
Concerns about scrutiny by professional licensing board	☐	☐	☐	☐
Time constraints to access PDMP during patient visits	☐	☐	☐	☐
I cannot designate someone to access the system on my behalf	☐	☐	☐	☐
Cumbersome registration process	☐	☐	☐	☐
Not comfortable using computer or Internet	☐	☐	☐	☐
Concerns for loss of business	☐	☐	☐	☐
Concerns related to poor patient satisfaction scores	☐	☐	☐	☐
List other barriers here:				

4. If you are not registered as a user, which of the following describe the reason you have not registered? (check all that apply)	
I'm not aware that I could register as a user	☐
There is no Internet access at work	☐
I'm too busy	☐
I don't think there would be any benefits	☐
I'm not allowed to share the account with my support staff	☐
I rarely, if ever, prescribe controlled substances	☐
I ethically and/or morally object to surveillance of patient medication habits / prescriptions	☐
Limited funds/resources to do anything with the information returned (e.g., referral to substance abuse treatment)	☐
Other reason (please specify):	

5. What would make the PDMP easier to use?	
Training on how to use the system	☐
Training on how to incorporate PDMP into clinical workflow	☐
Ability to authorize someone else to access system on my behalf (e.g., Medical Assistant)	☐
Having the state send reports to me automatically when patient patterns suggest potential misuse or diversion	☐
Other (please specify):	

6. What would make the PDMP more useful to you in clinical practice?	Not useful	Somewhat useful	Very useful
Training on how to interpret the data	☐	☐	☐
Training to communicate PDMP findings in non-confrontational manner	☐	☐	☐
Training on how to respond to PDMP information (e.g., resources for managing addiction problems; other resources within my community)	☐	☐	☐
Faster entry and display of prescriptions in database (currently up to one month lag)	☐	☐	☐
Unique patient identifier to avoid mistaken identity or use of aliases	☐	☐	☐
Linking state PDMP systems (i.e., Washington, California)	☐	☐	☐
Other (please specify):			

7. What is your age? ☐ Under 30 ☐ 30–39 ☐ 40–49 ☐ 50–59 ☐ 60 or older

8. What is your gender? ☐ Female ☐ Male

9. How many years have you practiced as a Nurse Practitioner? _____

10. How would you categorize your area of practice (i.e., Family practice, Surgery)? _____

11. How would you classify the area in which you practice?
    ☐ Urban ☐ Rural ☐ Rural off road

Thank you for taking the time to complete this questionnaire.

For more information or to enroll in the Alaska PDMP please go to: http://www.alaskapdmp.com/

Appendix C

Email Correspondence with Principal Author Jessica M. Irvine

Heath Christianson <hmchristianson@gmail.com> Wed, Dec 31, 2014 at 11:11 AM

To: jirvine@acumentra.org

Good morning and Happy New Year,

I am nearing completion of my Family Nurse practitioner degree at The University of Alaska Anchorage. As part of the degree requirements I am attempting to complete a project related to how NPs in Alaska use our PDMP. During my literature I found your questionnaire to be the best fit. I am writing to request permission to use your questionnaire in my research project. Please feel free to contact me if you have any additional questions.

Cheers,
Heath Christianson
907-570-4353

Jessica Irvine <JIrvine@acumentra.org> Wed, Dec 31, 2014 at 11:20 AM

To: Heath Christianson <hmchristianson@gmail.com>

Hello Heath,

Yes- please do use the questionnaire in your project. I'm glad it will be useful for you. Please let me know if you have any questions.

Thank you and Happy New Year!

Jessica

Jessica Morea Irvine, M.S. | **Research Manager** | **Acumentra Health**
2020 SW 4th Ave, Suite 520 | Portland, OR 97201 | ☎ 503.382.3946 | 971.409.6110

503.382.3997 | jirvine@acumentra.org | ***http://www.acumentra.org/PDMP/***

From: Heath Christianson [mailto:hmchristianson@gmail.com]
Sent: Wednesday, December 31, 2014 12:12 PM
To: Jessica Irvine
Subject: PDMP questionnaire

[Quoted text hidden]

Heath Christianson <hmchristianson@gmail.com> Wed, Dec 31, 2014 at 11:26 AM
To: Jessica Irvine <JIrvine@acumentra.org>

Thank you for the quick response. I will email you if any questions arise. If I get any interesting findings I'll send them your way.