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Awareness And Utilization Of The Ohio Automated Rx Reporting System By Physician Assistants

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AWARENESS AND UTILIZATION OF THE OHIO AUTOMATED RX REPORTING
SYSTEM BY PHYSICIAN ASSISTANTS

By

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BS (Heidelberg (College) University) 2004
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SYSTEM BY PHYSICIAN ASSISTANTS

Abstract

Chronic pain has become a public health epidemic. As pain complaints increase, so does the potential for drug abuse/misuse. Prescription drug monitoring programs (PDMPs) are active in 49 of the 50 states to assist providers in recognizing drug abuse/misuse. There is no clear standardization of who utilizes the PDMP and how. Little is still known about the ways PDMP results are incorporated into clinical decision making, what barriers exist, and how providers may or may not alter their prescribing plans based on the results. Laws surrounding prescribing practices and use of the Ohio Automated Rx Reporting System (OARRS) are constantly updated. Existing literature was reviewed regarding state PDMPs, OARRS, Ohio Revised Code, limitations of PDMPs, and physician assistants (PAs) role in using the OARRS. Current literature shows underutilization and lack of awareness of the OARRS by PAs. Quantitative data was collected using a twenty-six question electronic survey distributed to PAs actively licensed to practice in the State of Ohio as of February 25, 2014 (n= 2563) with a rate of return of 15.6%. Results showed 73.80% of PAs indicated that they were currently enrolled in OARRS and 26.20% indicated they were not enrolled. Of the PAs enrolled in OARRS, 71.87% responded that they do utilize the OARRS and of those enrolled, 74.04% report an average use of at least once per week. Routines for enrolling, accessing, and responding to OARRS results vary widely. As

controlled substance prescribing and use of OARRS increases, it is important to understand what approaches are most effective for identifying and addressing enrollment and utilization of the OARRS. Future trends for OARRS education on increasing enrollment and utilization of OARRS are described.

Keywords: OARRS, Prescription drug monitoring program, Physician assistant

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CHAPTER 1

Physician assistants (PAs) with prescriptive privileges allow for a cost effective and efficient bridge of the medical care gap. PAs provide increased access to desperately needed medical care (Cipher, Hooker, & Guerra, 2006). Hooker, Cawley and Everett (2011) agree that PAs have been essential during times of physician shortages. The number of board certified and licensed PAs continues to grow each year (Hooker et al., 2011; NP/PA prescribing stats, 2006; and Ross, Parle, Begg, & Kuhns, 2012). As the PA profession expands so does the need to write prescriptions for scheduled medications. The ability to prescribe scheduled medications is imperative to best practice medicine. Best practice medicine includes prevention, identification, and treatment of illnesses.

As the need and ability for PAs to write prescriptions increases, so does the need to do so safely and responsibly. Rules, regulations and laws regarding a PA's prescribing ability are still in their infancy and vary widely by state and institution. White and Davis (1999) found that "very early in the PA profession it became apparent to supervising physicians that their practice could be more efficient if they were allowed to delegate to PAs the prescription of medications" (p. 958). PAs have been prescribing medications since the 1980s when legislation was passed that allowed prescriptive privileges for PAs in several states (Physician Assistant Historical Society, 2013). According to the Drug Enforcement Administration (2013) and the American Academy of Physician Assistants (2010), currently 48 of the 50 states and the District of Columbia allow PAs the privilege to prescribe scheduled medications. PAs are often called upon to treat patients who have pain and require scheduled medications including opioid analgesics.

“Approximately 75 million people in the United States suffer from severe pain, which is the most common presenting complaint of patients seeking medical assistance” (Brushwood, 2003, p. 41). The ability to prescribe scheduled medications carries with it a duty to prescribe safely and responsibly.

Pain can be treated in different ways. Pain can be treated non-pharmacologically with interventions such as anesthesia assistance, behavioral counseling, nerve stimulation, physical therapy, acupuncture, or massage. Pain can also be treated with medications such as non-steroidal anti-inflammatory medications, anti-depressants, or opioid analgesics. When medications become the treatment of choice for pain (regardless of the origin of the pain) a balance must be achieved between safe and effective pain management and substance abuse.

In 2006 the State of Ohio passed Senate Bill 154 giving physician assistants the right to prescribe schedule III-V medications (Bricker & Eckler LLP, 2006; S.B. 154, 2006).

“Supervised prescribing (by PAs), as regulated by the state and by the physician supervisor, can improve patient access to comprehensive care and provide for increased efficiency and cost effectiveness” (Younger, P. A., & Aspen Health Law Center, 1997, p. 100). Some scheduled medications required prescriptions written by an attending physician with limited availability thus delaying relief for severe pain. In March 2013 House Bill 284 passed giving Ohio PAs prescriptive privileges of schedule II medications.

As an added security resource, the Ohio Automated Rx Reporting System (OARRS) program was established in 2006. The OARRS is a state-wide prescription drug monitoring program. OARRS is available, via registration through a secure website, to all prescribers, law enforcement officers, and pharmacists. With the addition of Schedule II medications to PAs’ prescribing rights many Ohio employers found it necessary to establish or revise existing policy

for PA prescribing. During the policy analysis at one Ohio medical center, concerns about the safety of prescribing scheduled medications were identified.

The purpose of the OARRS program is to “improve patient care and identify drug seeking behavior” (Feldman, Skeel-Williams, Knox, & Coates, 2012, p. 909) by tracking every prescription written for scheduled (II-V) medications. OARRS is designed to decrease abuse, misuse, “doctor shopping” (obtaining controlled substances from multiple health care providers without the prescribers’ knowledge of the other prescriptions) and *polypharmacy*, which is the use of multiple medications concurrently (Blumenschein et al. 2010; Feldman et al., 2011; Ohio Academy of Family Physicians, 2012).

Multiple evaluations of state prescription monitoring programs have been undertaken in several medical fields but have not resulted in the development of a standard protocol for awareness and utilization of state prescription monitoring programs. Analysis of awareness and utilization of state prescription monitoring programs has been explored in fields including emergency medicine, pharmacy, pain management, psychology, and physician utilization (Baehren et al., 2010; Barrett & Watson, 2005; Clark, 1991; Feldman et al., 2012; Gilson & Joranson, 2001; Joranson et al., 2002; Katz et al., 2008; Todd, 2010; Ulbrich, Dula, Green, Porter, & Bennett, 2010; Wang & Christo, 2009). To date, the awareness and utilization of the OARRS by PAs has not been evaluated and thus it is unclear how effectively PAs access this established system. Information on awareness and utilization of state prescription monitoring programs by PAs may identify an influence on the prescribing of controlled substances. Information collected could be used to help shape future policy regarding PAs’ prescriptive privileges, education on PA prescribing in Ohio, and allow for safer and more effective healthcare. Therefore, further research is needed to examine the awareness and utilization of the

Ohio Automated Rx Reporting System by PAs.

Purpose of the Study

The purpose of this study is to examine the awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants.

Statement of the Problem

Physician assistants do not adequately utilize the Ohio Automated Rx Reporting System. There is an overarching problem with prescription drug monitoring programs in that there is a lack of unification. There is not one governing body; many but not all states have a prescription drug monitoring program; there is no standardization of what information is collected, by whom, or who may access it; there is no unified system of communication between the programs in each state. However this larger problem is outside the scope of this study. The proposed study will focus on specific population and specific state monitoring program. The results from this study could be used to create local (hospital wide) and state policies regarding access and utilization of the OARRS program.

Hypotheses

The following null hypotheses were based on the selected review of literature and the intuition of the researcher:

1. Physician assistants actively licensed to practice in the State of Ohio are unaware of the OARRS.
2. Physician assistants actively licensed to practice in the State of Ohio do not utilize the OARRS.
3. No factors are predictive of awareness of OARRS by physician assistants actively licensed to practice in the State of Ohio.

4. No factors are predictive of utilization of OARRS by Physician assistants actively licensed to practice in the State of Ohio.
5. Physician assistants actively licensed to practice in the State of Ohio do not alter their prescribing plans as a result of utilization of OARRS.

Definition of Terms

For the purpose of this study, the following terms are defined.

Awareness: Knowing that something (such as a situation, condition, or problem) exists (awareness, 2013).

Continuing medical education (CME): Includes but is not limited to: graduate education, education for health professionals that follows completion of formal post-medical school specialty training. Formats include but are not limited to: lectures, seminars, refresher courses, workshops, audio- and video-recordings, professional organizations, hospitals (continuing medical education, 2002)

Controlled substance: any drug defined in the five categories of the federal Controlled Substance Act of 1970. The categories, or schedules, cover opium and its derivatives, hallucinogens, depressants, and stimulants. Schedule I drugs have a high abuse potential and no approved medical uses. Drugs in Schedules II to V all have approved medical indications with decreasing abuse and dependence liabilities as the schedule number increases (controlled substance, 2009).

Doctor shopping: Obtaining controlled substances from multiple health care providers without the prescribers' knowledge of the other prescriptions (Blumenschein, et al., 2010).

Drug abuse/misuse: The use of a controlled substance in a maladaptive pattern resulting in significant impairment or distress, such as failure to fulfill social or occupational obligations or recurrent use in situations in which it is physically dangerous to do so or which end in legal problems. Abuse also encompasses inappropriate use of medications other than the explicit prescriber's instructions (substance abuse, 2003).

Drug diversion: The channeling of controlled substances to another person(s) or for any use other than prescribed by the provider. This can include: theft, forging, tampering, counterfeiting, and illegal sales (Kasprak, J., 2003).

Drug Enforcement Administration (DEA): A United States Federal law enforcement agency under the Department of Justice tasked with monitoring, controlling and preventing illegal or inappropriate drug use (Drug Enforcement Agency; Office of Diversion Control, 2013).

Medical provider: Doctor (M.D. or D.O.), dentist, nurse practitioner, physician assistant, or any other healthcare provider who might prescribe medications. (Blumenschein et al., 2010).

OARRS: Ohio Automated Rx (Prescription) Reporting System.

Opioid analgesic: Medication that binds with the opioid receptors in the central nervous system to block the perception of pain or affect the emotional response to pain (Opioid Analgesic, 2007).

Physician assistant: A graduate of an accredited educational program and is nationally certified and state-licensed to practice medicine with the supervision of a physician. PAs perform physical examinations, diagnose and treat illnesses, order and interpret lab tests, perform procedures, assist in surgery, provide patient education and counseling, and make rounds

in hospitals and nursing homes. All 50 states and the District of Columbia allow PAs to practice and prescribe medications (American Academy of Physician Assistants, 2013).

Polypharmacy: The use of multiple medications concurrently (Blumenschein et al., 2010).

Prescribing privileges: A legal privilege that must be applied for by the physician assistants in their respective state that enables them to prescribe drugs and other medicines required for the treatment of medical conditions (Brian, n.d.).

Prescription drug monitoring program: According to the National Alliance for Model State Drug Laws (NAMSDL, 2013), a PDMP is a statewide electronic database that collects designated data on substances dispensed in the state. The data from the database is disseminated to individuals who are authorized under state law to receive the information for purposes of their profession.

Scheduled medication: Substances are placed in their respective schedules based on whether they have a currently accepted medical use in treatment in the United States, their relative abuse potential, and the likelihood of causing dependence when abused. See Table 1. (Drug Enforcement Agency; Office of Diversion Control, 2013).

Supervising physician: An allopathic or osteopathic physician (M.D. or D.O.) licensed to practice in the state, which accepts responsibility for the supervision of services provided by a physician assistant. Direction of the medical practice of the physician assistant is provided and assured by a supervising physician, but this does not necessarily require the physical presence of a supervising physician at the place where services are rendered (American Academy of Physician Assistants, 2013).

Treatment plan: The intended sequence of procedures for the treatment of a patient (treatment plan, 2008).

Utilization: To make use of (Utilization, 2013).

Limitations of the Study

- 1) The study is limited to the physician assistants actively licensed to practice in the State of Ohio. Therefore, findings from this study cannot be generalized to all physician assistants or physician assistants in other states.
- 2) The study is limited to physician assistants. Therefore this study does not represent all medical providers in the State of Ohio.
- 3) The completion of the survey is voluntary. Therefore some physician assistants may choose not to complete the questionnaire, thus, limiting sample size.
- 4) The responses are self-reported.

Assumptions

The following were the basic assumptions of the design:

1. The questionnaire respondents' interpretation of the questions is accurate.
2. The questionnaire respondents answer in an honest and thoughtful manner.
3. An existing research tool developed by Ulbrich et al. (2010) is used with permission and adapted for physician assistants.
4. The questionnaire was previously tested for validity by Ulbrich et al. (2010).

CHAPTER 2

LITERATURE REVIEW

The purpose of the chapter is to present a selected review of literature related to the objectives of this study. The information provided is discussed employing the best practice conceptual framework. The first section provides an outline of the best practice conceptual framework as it pertains to the awareness and utilization of the Ohio Automated Rx Reporting System by PAs. The second section of the review of literature discusses the history of prescription drug monitoring programs. Identified negatives and limitations of prescription drug monitoring programs are discussed in the third section. The fourth section presents information about the Ohio Automated Rx Reporting System. The Ohio revised code is discussed in the fifth section. The use of prescription drug monitoring program utilization in selected fields is discussed in the sixth section. The seventh section discusses the PA's role in prescription drug monitoring programs. In the eighth section, PA pharmacologic education is discussed. The chapter concludes with a summary of the selected review of literature.

Conceptual Framework

The conceptual framework used to examine the awareness and utilization of the Ohio Automated Rx Reporting System by PAs is Solberg's (2007) improving medical practice. Improving medical practice is a framework that incorporates the vision for the PA profession; "PAs transforming health through patient-centered, team-based medical practice – with its hallmark of patient-centered, team-based care—as a driving force for significant improvement" (American Academy of Physician Assistants, 2013, p. 7) Through this framework the investigator

attempts to quantify the awareness and utilization of the Ohio Automated Rx Reporting System by PAs and how it could relate to future policies and optimal patient care.

The issue of appropriate use of opioids in the treatment of pain is complex and controversial. This debate is often highlighted in improving medical practice discussions.

Feinberg (2011) relates that:

On one side there is the ever increasing problem of deaths and dysfunction from the inappropriate use of opioids, and on the other side are the needs of patients for adequate pain control to facilitate comfort, activity and function. For the provider and patient, achieving a balance across the continuum of outcomes from pain relief, side effects, addiction, abuse, diversion and potential death, remains problematic. (p. 1)

In response to the increasing morbidity and mortality associated with the increasing use of opioids, the Centers for Disease Control and Prevention (2010) has released several recommendations for health care providers for improving medical practice guidelines. The Center for Disease Control and Prevention (2010) recommendations include:

The belief that opioid medications for pain should only take place after a determination has been made that alternative therapies have not provided adequate pain relief.

Additionally, the lowest effective dose of opioids should be used. Behavioral screening, patient agreements, and random urine testing should be strongly considered in patients with pain, who have been treated with opioids for more than six weeks. (p. 4)

The improving medical practice framework dictates that “opioids (despite their potential for problems) have a place in the practitioner’s treatment armamentarium when other methods have failed and when the use of opioids results in less pain, more function and manageable side-effects” (Feinberg, 2011, p. 3). Providers must examine opioid prescribing with a risk vs. benefit

lens. If other non-opioid treatment methods fail and there is clinical indication for the use of opioids, the provider may decide opioid therapy is appropriate.

History of Prescription Drug Monitoring Programs

Brushwood (2003) indicates that despite the availability of safe and effective pain treatment options, many patients are either over or under treated. Every year thousands of visits are made to medical offices, emergency rooms, and urgent care facilities for pain related complaints. PAs are used to increase access to medical services. Due to increased availability, a patient often sees a PA for his/her medical care. As PAs are seeing an increased number of patients, and many of those patients with pain related complaints, the potential for writing prescriptions for opioid medications increases. There is a need to utilize available safety mechanisms and resources to prevent drug diversion and abuse.

There is no standard or measurement available for medical providers to determine if a patient's pain is legitimate or falsified. Medical providers rely on the patient's history, physical exam, and diagnostic tests to evaluate the need for opioid analgesics to treat pain. In order to collect evidence on the problem of inappropriate prescribing and dispensing of controlled substance medications and to facilitate a resolution to the problem, states began using prescription drug monitoring programs (Brushwood, 2003; Fishman, Papazian, Gonzalez, Riches, & Gilson, 2004; GAO-04-524T, 2004; Wilsey et al., 2011).

As medications for the management of pain have advanced over centuries, laws designed to regulate access to such medications also developed. "Since the early 1930s, state regulatory, administrative, and law enforcement agencies have seen the need for and have worked to establish systems to track and monitor the prescribing and dispensing of particular prescription drugs" (Blumenschein et al., 2010). California was the first state to establish a prescription drug

monitoring program in 1939. Over the years, more and more states followed California in establishing prescription drug monitoring programs (Fishman et al., 2004). According to the Alliance of States with Prescription Monitoring Programs (2001) and the National Alliance for Model State Drug Laws (2014) 49 states (all but Missouri) and the District of Columbia have prescription drug monitoring programs. The Alliance of States with Prescription Monitoring Programs was formed in 1990 to facilitate “the exchange of information and ideas among state and federal agencies on prescription monitoring programs” (Alliance of States with Prescription Monitoring Programs, n.d., 1).

Attempts to monitor prescription drug use and diversion have evolved over time. Early forms of prescription drug monitoring programs used triplicate or carbon copy prescriptions. With advances in the technology during the 1990’s, some states began using computers to collect, track, and transmit monitoring information (Fishman et al. 2004; Todd, 2010). Another factor leading to the success and growth of state prescription drug monitoring programs was the Harold Rogers Prescription Drug Monitoring Program which was funded by the federal government and provided supporting funds to state prescription drug monitoring programs (Bureau of Justice Assistance, 2007; Fishman et al., 2004; Harold Rogers prescription drug monitoring program, 2013; Paulozzi, Kilbourne, & Desai, 2011; Todd, 2010).

An additional attempt by the government to support state prescription drug monitoring programs was made in 2005. In August of 2005, President George W. Bush signed the National All Schedules Prescription Electronic Reporting (NASPER) Act into law (Manchikanti, Whitfield, & Pallone, 2005; Paulozzi et al., 2011). This act provided additional federal funding to state prescription drug monitoring programs. However, it was more than four years after the

passing of the legislation before any funding became available and the available funds have been limited (Todd, 2010).

The federal government also attempted to increase regulations regarding the manufacturing and distribution of medications. The Controlled Substance Act of 1970 allowed the Drug Enforcement Administration to oversee the manufacturing and distribution of legal narcotic medications (Catholic University of America, 2009; Fishman et al., 2004; GAO-02-634, 2002). The Drug Enforcement Administration classifies medications into five distinct categories or schedules depending upon the drug's acceptable medical use and the drug's potential for abuse or dependency (See Appendix A). "Abuse rate is a determinate factor in the scheduling of the drug" (DEA 2013). For example, Schedule I drugs are considered the "most dangerous" class of drugs with a "high potential for abuse" and potentially severe psychological and/or physical dependence. Schedule I medications have very limited medical use. As the drug schedule changes-- Schedule II, Schedule III, etc., so does the abuse potential-- Schedule V drugs represents the least potential for abuse (Sharp, 1991; Curtis et al., 2006). Because of the potential for abuse, opioid analgesics are regulated under federal narcotics and controlled substances laws (Joranson et al., 2000). According to Drug Enforcement Agency Office of Diversion Control (2013), 21 oral opioid analgesics are categorized at Schedule II.

State specifications vary widely but information collected and transmitted by the state drug monitoring programs often include but are not limited to patient name, date of birth, prescriber's name, medication, amount, and directions. (GAO-04-524T, 2004; GAO-02-634, 2002, Kasprak, 2003; Paulozzi et al., 2011; Wilsey et al., 2011).

Although there is significant heterogeneity regarding the specifics of how the prescription drug information is monitored, "states have found that prescription drug monitoring programs

are among the most effective tools available to identify and prevent drug diversion at the prescriber, pharmacy, and patient levels” (Alliance of states with prescription monitoring programs, 1999, 3; Woodworth, 2013). Benefits of prescription drug monitoring programs identified by Wang and Christo (2009), Curtis et al. (2006), and the United States General Accounting Office (GAO-02-634, 2002) include reduced time and effort for law enforcement agencies to investigate diversion and states with prescription drug monitoring programs have reduced the supply of controlled substances.

Limitations of Prescription Drug Monitoring Programs

Many medical providers and law enforcement agents will agree that drug monitoring programs are well intended and can be effective at curbing diversion and abuse; unintended consequences can limit the utility of aforementioned programs. “Despite great efforts and good intentions, PDMPs are considered by many healthcare providers to have a collateral of negative impact on other areas of legitimate medical care” (Fishman et al., 2004, p. 311). One major criticism of prescription drug monitoring programs is the lack of consistency in what information is collected, by whom, how often, and what is done with the results (Barrett and Watson, 2003; Blumenschein et al., 2010; Brushwood, 2003; Simeone, Holland, & Simeone Associates Inc., 2006; Todd, 2010; U.S. Drug Enforcement Administration, 2011; Wang & Christo, 2009). Manchikanti et al. (2005) identified another important problem with PDMPs was the lack of communication between state programs.

Limitations of electronic prescription drug monitoring programs. The two biggest limitations identified were cost (to the patient or the medical practice) and limited technology. Manchikanti et al. (2005) noted that not all states and medical facilities provide internet access to PDMP data. Rural health care facilities may also have limited financial and technologic access to

PDMP data. Electronic PDMPs carry a continuous cost of technology update (GAO-02-634, 2002) and may be seen as an additional burden to medical practices.

A PA can prescribe up to seven days of a Schedule II medication without the patient seeing the supervising physician. If your supervising physician has seen the patient before, and the patient is seeking a refill, you may prescribe any amount, but common sense would indicate no more than 30 days. (Ohio Association of Physician Assistants, 2013, PA Formulary section, para. 14)

It is common that state laws limit the amount of scheduled medications that can be prescribed at one time (typically a 30 day supply) and that increases the number of doctor visits for patients, thus increasing costs.

Effects on patient care and access to opioid medications. The influence of drug monitoring programs can have far reaching implications not only for medical providers but also for their patients. Brushwood (2003), Fishman et al (2004), GAO-02-634 (2002) and Woodworth (2013) agree that patients fear having their information tracked and stored and the possibility for confidentiality breach may lead to an unfair label of “drug seeking or dependency.”

Blumenschein et al. (2010), Fishman et al. (2004), and Manchikanti et al. (2005) found that PDMPs had adverse effects on provider prescribing that included inappropriate substitution of nonregulated medications and a decrease in number of prescriptions written. Clark (1991) also found that providers showed a reduced inclination to provide narcotic prescriptions for chronic or acute pain.

Impact on perception of regulations and practice modification. According to Fishman et al. (2004) and Clark (1991) physicians are reluctant to use PDMPs due to fear of being “red flagged” as an over prescriber. Barrett and Watson (2005), Gilson and Joranson (2001),

Manchikanti et al. (2005), and Wang and Christo (2009) determined some prescribers felt that utilization of prescription drug monitoring programs would place scrutiny on their practice with potential ill effects of investigation, litigation, or reprimand. GAO-02-634 (2002) and Woodworth (2013) found that physicians were concerned about having their prescribing decisions and patterns tracked and being investigated without sufficient cause. Due to this fear of persecution physicians may be hesitant to prescribe certain scheduled medications or may even inappropriately substitute medications. To combat the fears of harassment of providers, some states have added statues of use for the PDMPs that ensure only authorized users access the information and that the information is used for intended purposes only (GAO-02-634, 2002). Another identified criticism of using OARRS is the burden of running the report (Woodworth, 2013). This specific argument has been counteracted by enactment of Ohio H.B. 93 that allows medical support staff the ability to run an OARRS report (Ohio Revised Code 4729.80 (A)(5) H.B. 93).

Fass and Hardigan (2011) surveyed pharmacists in Florida and results showed that a majority of the pharmacists felt that results from a PDMP report would not discourage them from dispensing controlled substances and would not invade patient privacy.

Inconsistency of information gathered and utilization. Significant heterogeneity exists between states regarding what information is gathered and how it is utilized. Programs vary from state to state in what information is collected, what drugs are monitored, how information is collected, who has access to the information, and who monitors the program (Barrett & Watson, 2003; Blumenschein et al., 2010; Brushwood, 2003; GAO-02-634, 2002; Simeone et al., 2006; Todd, 2010; U.S. Drug Enforcement Administration, 2011; Wang & Christo, 2009). States vary in their use of electronic versus paper prescription monitoring. Comprehensive coverage of all

drug schedules offers the most effective monitoring program (GAO-02-634, 2002). Twenty-four states have mandatory PDMP access requirements that necessitate a prescriber must run a system query on the patient prior to prescribing controlled medications (National Alliance for Model State Drug Laws, 2014).

Ohio Automated Rx Reporting System

Following success of prescription drug monitoring programs in multiple states as well as the technology boom in healthcare in the 1990s, the Ohio Automated Rx Reporting System was established in 2006. The OARRS is operated by the Ohio State Board of Pharmacy. Data are collected on prescriptions for medications scheduled II-V. The information collected is available to pharmacists, prescribers registered with OARRS, and law enforcement (Foxhall, 2010; Woodworth, 2013). OARRS reports contain patient information including patient name, date of birth, previous controlled prescriptions (includes prescriber, substance, amount, and date dispensed), pharmacies where the prescriptions were filled and all addresses used by the patient. Data reported by Alliance of States with Prescription Monitoring Programs (n.d.) showed that in 2008 21,000,000 prescriptions were recorded by the OARRS and patient history was accessed 353,500 times.

The OARRS has developed a set of guidelines (Rule 4731-11-11) that outlines when to seek access to OARRS prior to prescribing or personally supplying a controlled substance (State Medical Board of Ohio, 2011). For an OARRS report to meet ethical standards, the provider running the report must be currently treating the patient (Ohio Academy of Family Physicians, 2012). The guidelines suggest accessing and running an OARRS report: (a) if a patient is exhibiting signs of drug abuse or diversion; (b) when you have a reason to believe the scheduled medication treatment will continue for twelve weeks or more; (c) and at least once a year

thereafter for patients receiving scheduled medications (Ohio Academy of Family Physicians, 2012; Ohio State Medical Association, 2013; State Medical Board of Ohio, 2011). The OARRS guidelines outline when a report *must* be run and when a report *should* be run.

The Ohio Academy of Family Physicians (2012), Ohio State Medical Association (2013), and State Medical Board of Ohio (2011) agree that running an OARRS report is *required* by a medical provider when: (a) a drug screen result is inconsistent with the treatment plan (i.e., illicit drugs or medications not prescribed are detected in the urine toxicology screen); (b) a patient refuses to participate in a drug screen; (c) forging or prescription altering occurs; (d) the patient is suspected of selling prescription drugs; (e) the patient is suspected of stealing or borrowing prescription drugs; (f) the patient is suspected of receiving drugs from multiple prescribers; (g) the patient has been arrested; (h) the patient is suspected of drug diversion; (i) or having a family member, friend, law enforcement officer, or health care professional express concern related to the patient's use of illegal or reported drugs.

The Ohio Academy of Family Physicians (2012), Ohio State Medical Association (2013), and State Medical Board of Ohio (2011) follow OARRS guidelines and *suggest* running a report by a medical provider when: (a) a patient has a known history of chemical abuse or dependency; (b) a patient frequently requests early refills of scheduled medications; (c) a patient appears impaired or overly sedated during an office visit or exam; (d) a patient frequently loses prescriptions; (e) a patient requests drugs by specific name, street name, color; (f) or a patient shows recurring emergency department visits to obtain reported drugs.

OARRS reports are intended to assist providers in improving prescription medication management for their patients and to be used as a screening tool to prevent abuse, misuse and diversion of controlled substances (The Columbus Dispatch, 2010; Feldman et al., 2011; GAO-

04-524T, 2004; Ohio Academy of Family Physicians, 2012). Although there is a general consensus among medical providers that the best practice model includes standardization of medical protocols, the fact that the OARRS is underutilized and occasionally viewed as an elective tool versus a mandatory standard protocol is concerning.

Ohio Revised Code

The Ohio Revised Code is a compilation of statutes that is the source for state regulations for medical providers and prescribers in the State of Ohio. Bills, statutes and policies are constantly being revised and amended. Most recently, on September 16, 2014, Ohio House Bill 341 was passed. Ohio Revised Code Sec 4730.53. (A)- Sec. 4731.055. (E) of House Bill 341 (2014) states that a prescriber of controlled substances must request and document the results of an OARRS report prior to prescribing any medications. The report must include the last 12 months. If the provider works in a county that borders another state, a report must be run for the bordering state if a drug database is available in that state. If prescribing is to continue after ninety days, then an additional OARRS report must be run and documented at the ninety day interval.

There are also some exceptions stated in the Ohio Revised Code Sec 4730.53. (A)- Sec. 4731.055. (E) of House Bill 341 (2014): an OARRS report is not required if there is no report available, the medication is prescribed for less than a seven day period, if the medication is furnished for cancer treatment, for hospice care, in a nursing home, in a hospital, or for acute pain treatment after surgery/delivery.

While the above statutes and laws are helpful in providing suggestions and parameters, there are always limitations and margins of error that are found. There is no specific timeline set

for controlled substances that are prescribed after surgery. The term “acute” is not defined in a timeline.

Prescription Drug Monitoring Program Utilization

“To date little research has examined the efficacy and safety of prescription drug monitoring programs in clinical practice” (Todd, 2010, p. 24). The limited examination of prescription drug monitoring program utilization has focused on fields that have a high population of patients who complain of pain and might require opioid analgesics including emergency medicine, pain management, pharmacy, and psychology.

Patients with painful conditions often seek care at emergency rooms as a first line of treatment for their pain, possibly due to late hours, frequently changing staff (shift changes of nurses and physicians create a window for drug diversion), or a sense that the pain requires urgent attention. Baehren et al. (2010) examined the influence of a state prescription drug monitoring program results (Ohio Automated Rx Reporting System OARRS) on clinical management of patients complaining of pain in the emergency department. Baehren and colleagues found that emergency room physicians reviewing OARRS data prior to prescribing medications resulted in altered prescribing plans for 41% of cases, with plans for less opioid medications in 61% and more opioid medications in 39% of cases. Todd (2010) states that the data found by Baehren et al. do not reveal why the OARRS data changed the prescribing decisions. Baehren et al. and Todd agree that awareness and utilization of state prescription drug monitoring programs are useful tools for emergency medicine providers.

“Because pain is subjectively defined, it is difficult to diagnose and treat” (Wang & Christo, 2009, p. 508). For this reason, providers in the pain management field have been using state prescription drug monitoring programs for decades (Gilson & Joranson, 2001; Joranson et

al., 2002; Katz et al., 2008; Manchikanti et al., 2005; Wang & Christo, 2009). Wang and Christo (2009) found that while states with prescription monitoring programs had lower incidences of abuse, misuse and diversion, neighboring states without prescription drug monitoring programs had increased incidences of abuse, misuse and diversion. Feldman et al. (2012) revealed that although states with prescription drug monitoring programs reduced the number of prescriptions for controlled substances being written, there was no evidence this was in a positive manner (i.e., preventing diversion versus inadequate pain management). These mixed results of study of prescription drug monitoring programs in the field of pain management warrant additional investigation into balancing adequate pain management with reduction in abuse, misuse and diversion.

The research done by Ulbrich et al. (2010) examined factors influencing the enrollment of a group of pharmacists in Ohio in the OARRS program. Results of the study showed that the pharmacists that were enrolled in OARRS did so to decrease misuse, abuse and diversion and those pharmacists who were not enrolled cited a significant time burden to access the OARRS. Ulbrich and colleagues used his research results to reform and revise continuing education information for pharmacists about PDMPs.

The work done by Feldman et al. (2012) was designed to determine if attending physician behavior influenced the behavior of resident physicians. Feldman and colleagues surveyed attending and resident physicians at one hospital in the State of Ohio for awareness and utilization of the OARRS and found that 96% of attending physicians and 81% of resident physicians had awareness of the state prescription monitoring program. Of those with awareness, 79% of attending and only 51% of residents reported utilizing the OARRS.

According to Feldman et al. (2012) the primary reason cited for utilizing the OARRS was concern for medication abuse and that information from the OARRS influenced prescribing habits by decreasing the quantity of medication given, changing the medication given or increasing the amount given.

Feldman et al. (2012) found that in relation to physician and resident prescribing trends, 68% of physicians and 79% of residents decreased the amount of medication prescribed when they consulted the OARRS program. This work is important as it shows that supervising physician behavior can have a direct positive influence on those around them. Since PAs work with a supervising physician (directly or indirectly) this is a factor that may influence physician assistant awareness and utilization of state prescription drug monitoring programs. Similarly, Schneider et al. (2009) found that physicians and other medical providers were more likely to follow proper hand hygiene practices if those practices were demonstrated by their supervisors.

Another study by Feldman and colleagues (2011) found 84% of physicians surveyed had awareness of the OARRS and only 58.8% of those physicians utilized the OARRS. Reasons cited for accessing OARRS included suspicion of diversion (49%), suspicion of abuse (47%), additional information (3%), and job requirement (17%).

Barrett and Watson (2003) examined physicians in Virginia and their awareness and utilization of a prescription drug monitoring program and found less than half the physicians were aware of the program. “Of the identified physicians that were aware of the prescription drug monitoring program, only 11% reported utilization of the program” (Barrett & Watson, 2003, p. 8).

Physician Assistants' Role in Prescription Drug Monitoring Programs

PAs are licensed independent practitioners. Subsequently, they can perform physical examinations, diagnose and treat illnesses, order and interpret lab tests, perform procedures, assist in surgery, provide patient education and counseling, and make rounds in hospitals and nursing homes. PAs work in all medical fields including, but not limited to, family medicine, internal medicine, obstetrics and gynecology, pediatrics, general surgery, emergency medicine, psychiatry, and surgical subspecialties. PAs work in all settings including government, private, urban, rural, non-profit, group practice, solo practice, hospitals, and education.

O'Connor (2009) states "Health professionals who are not physicians often have more time to guide, support and monitor patients. Better educated patients can make better-informed decisions about taking prescribed medications and often adhere more closely to treatment regimens." O'Connor agrees that PAs increase accessibility, choice, and quality of care for patients.

Data from Hooker and colleagues' (2011) study showed overall supply of PAs is likely to increase by 72% to 127,821 PAs by 2025. This estimate of PA profession growth may lead policy makers to revise PAs' prescriptive policy to allow the most cost effective and efficient use of PAs to bridge the medical care gap. With the potential policy revision, thought needs to be given to incorporating knowledge and utilization of state prescription drug monitoring programs.

Prescription drug monitoring programs allow for a more educated approach to prescribing controlled substances. Informed decisions may be made about what controlled substances a patient has taken, how much, how often, and who is prescribing the medications. This information enhances the patient compliance. White and Davis (1999, p. 959) found that "The delegation of prescriptive authority based upon the discretion of the supervising physician

has proven to be a safe practice. There has been no record of significantly increased liability or malpractice claims due to PA prescribing.”

Physician Assistant Pharmacologic Education

In the State of Ohio, PAs must qualify for and obtain a certificate to prescribe. To apply for a certificate to prescribe, the Ohio Board of Medicine requires the following: (a) transcript verification of a Masters Degree that is clinically relevant to the PA profession; (b) thirty pharmacology-specific CME hours (accredited by either the American Academy of Physician Assistants or the Accreditation Council for Continuing Medical Education); (c) fifteen fiscal and ethical CME hours; and (d) twenty clinical hours (American Academy of Physician Assistants, 2013; Ohio Association of Physician Assistants, 2013; State Medical Board of Ohio, 2013).

PAs are required to collect 100 continuing medical education (CME) credits a year to maintain a national certification. Ohio law requires that in addition to the 100 hours of CME, there must be 12 hours of CME specific to pharmacologic updates. This requirement helps to ensure that once receiving the prescriptive authority from the state, a PA must stay current on contemporary pharmacologic treatments (American Academy of Physician Assistants, 2013; Ohio Association of Physician Assistants, 2013; Medical Board of Ohio [Continuing Medical Education], 2013).

It is discretionary and not mandatory that a PA supervisory plan include guidelines for checking OARRS. The PA supervisory plan is developed by the PA, the supervising physician and possibly the employing entity and may include guidelines for the circumstances and degree of collaboration necessary for checking OARRS or consultation prior to prescribing or personally providing scheduled medications to a patient (State Medical Board of Ohio, 2011).

Ohio Governor John Kasich helped spearhead the development of the Governor's Cabinet Opiate Action Team (GCOAT) for Prescriber Education. GCOAT created a continuing education video to provide information to health care professionals regarding the Guidelines for Prescribing Opioids for the Treatment of Chronic, Non-Terminal Pain (State Medical Board of Ohio; Opiate Action Team, 2013). The Guidelines have been adopted by the Medical Board, Nursing Board, Pharmacy Board and Dental Board and establish a trigger point for re-assessment of chronic pain patients receiving opioids at certain levels for 90 days or longer (State Medical Board of Ohio; Opiate Action Team, 2013). GCOAT helped fund community-based prescription drug abuse prevention coalitions, promote education of prescribers, and assist with registration of prescribers with the OARRS program (Governor's Cabinet Opiate Action Team, 2013). The United States General Accounting Office (GAO-04-524T, 2004) found some PDMP's provided limited educational sources for physicians and the public. Barrett and Watson (2003) agree that all educational efforts regarding prescription drug monitoring programs must include PAs as well as other providers and the public.

Summary

A review of the literature indicates that there has been some study of awareness and utilization of prescription drug monitoring programs in areas such as emergency medicine, pain management, psychology, and physician utilization. Literature also revealed a severe under-utilization of the OARRS program (Woodworth, 2013). In 2010, Foxhall found that only 20% of prescribers were signed up to use OARRS. The Columbus Dispatch (2010) found similar results revealing that approximately 13% of Ohio's licensed providers were registered to use OARRS. No research has explored awareness and utilization of the Ohio Automated Rx Reporting System by PAs.

In light of the mixed results showing both positive and negative effects of state prescription drug monitoring programs, future studies should evaluate whether the findings reflect reduction in abuse and diversion or suboptimal pain treatment (Curtis et al., 2006).

The number of PAs who have prescriptive rights is rising, and an increasing number of states have prescription drug monitoring programs, both factors dictate a need to explore and understand the awareness and utilization of state prescription drug monitoring programs by PAs. The mixed results of earlier research on the awareness and utilization of a state prescription monitoring program and a lack of studies directly related to physician assistants give reasons for further investigation of the awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants.

CHAPTER 3

METHODOLOGY

Procedures

This study utilizes a quantitative approach to explore the following research questions: (a) Are physician assistants actively licensed to practice in Ohio aware of (enrolled in) the OARRS program?; (b) Do physician assistants actively licensed to practice in Ohio utilize the OARRS program?; (c) Do any factors predict enrollment or utilization of the OARRS program by physician assistants actively licensed to practice in Ohio?; and (d) Do physician assistants enrolled in OARRS alter their prescribing practices based on results of OARRS reports?

PAs actively licensed to practice in the State of Ohio ($N = 2,563$) as of February 25, 2014, were contacted to participate in this study. A previously created, validated, and implemented questionnaire (Appendix D) by Ulbrich et al. (2010) used with permission, was adapted, and distributed to physician assistants actively licensed to practice in the State of Ohio as of February 25, 2014. This study was limited and cannot be generalized to all PAs or all state prescription monitoring programs.

The present author utilized the adapted questionnaire to examine the awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants. Data included age, gender, years in practice, primary setting, primary specialty, current enrollment in OARRS, number of OARRS reports requested in past month, frequency of OARRS access, reason for requesting OARRS report, medication denied from OARRS results, supervising physician notified based on OARRS results, importance of OARRS in prescribing decision, reason for enrolling in OARRS, reason for accessing OARRS, reason if not enrolled in OARRS, education

about OARRS, knowledge of the OARRS, access to internet, specialty training, and state of graduate school.

After receipt and tabulation of the data from the PAs actively licensed to practice in the State of Ohio, the data was statistically analyzed both descriptively and inferentially.

Research partners. The following people committed to assist in this research design:

- 1) Safdar Khan, M.D. Chief of Orthopaedic Spine Surgery at The Ohio State University Wexner Medical Center. Dissertation committee member.
- 2) The primary investigator Timothy Ulbrich (cf. Ulbrich, 2010) was contacted and permission gained for use of their research questionnaire.
- 3) Ohio Board of Medicine was contacted to obtain public record list of actively licensed physician assistants in the State of Ohio and their contact information.

Selection of subjects. Actively licensed PAs in the State of Ohio were asked to participate in this study. This study was limited to actively licensed PAs due to increased likelihood of utilization and awareness of OARRS. The Ohio Board of Medicine was contacted electronically February 25, 2014 (Appendix G) and the number of actively licensed PAs in Ohio was reported as 2,563. The Ohio Board of Medicine provided a list of those actively licensed PAs and their electronic contact information for research purposes only.

Of the 2,563 PAs actively licensed in Ohio, only 2,386 had email addresses on file with the Ohio board of medicine. An email consisting of a cover letter with an electronic link to the consent form and the questionnaire (Appendix B, C, D respectively) were created and sent electronically to each PA actively licensed to practice in the State of Ohio as of February 25, 2014.

Prior to participating in the study, each PA read and marked a box to indicate informed consent and willingness to participate in the voluntary study. Marking was used instead of a signature to keep confidentiality at its highest. The informed consent form, which can be found in Appendix C, is in accordance with the University of New England Human Subject Review Board for the protection of Human Subjects (Appendix E). The participants consented and then completed surveys voluntarily and anonymously.

Stakeholders. What follows are a list of potential stakeholders who may be impacted by the present research.

- 1) Physician assistants licensed to practice in Ohio: The OARRS is a vital tool to physician assistants who prescribe scheduled medications in Ohio.
- 2) Physician assistants in states with prescription drug monitoring programs: Awareness and utilization trends of prescription drug monitoring programs by physician assistants are of interest to physician assistants who prescribe scheduled medications in states with those programs.
- 3) Employers of physician assistants in states with prescription drug monitoring programs: Awareness and utilization trends of prescription drug monitoring programs by physician assistants are of interest to employers of physician assistants who prescribe scheduled medications as it could affect policy/procedures and may also reduce diversion and misuse.
- 4) Patients: Awareness and utilization trends of prescription drug monitoring programs of physician assistants may increase access to desperately needed scheduled medications prescribed safely.

- 5) Ohio Automated Rx Reporting System: Awareness and utilization trends of the OARRS by physician assistants are of interest for the shaping of current or future policy regarding use of the OARRS, physician assistant prescribing rights, and current or future continuing education seminars and information.
- 6) Ohio Opiate Action Team: This team can provide data specific to the State of Ohio. They have established opioid prescribing guidelines for Ohio. The Ohio Opiate Action Team has access to Ohio providers in different areas, including physicians, pharmacists, law enforcement, and others. The team can aid in dissemination of results.
- 7) State Medical Board of Ohio: The State Board has access to Ohio providers in different areas such as physicians, pharmacists, law enforcement, and others. They can aid in dissemination of results.

Biases. The principal investigator was a currently licensed PA in the State of Ohio who uses the OARRS. The principal investigator treats a high volume of patients with pain complaints. The 26-question, self-reported survey that was developed by Ulbrich and colleagues (2010) was used with permission and adapted for physician assistants. (Appendix D, Appendix E).

Limitations of the study. What follows are potential limitations to the present study.

- 1) The study was limited to the participating physician assistants actively licensed to practice in the State of Ohio. Therefore, findings from this study cannot be generalized to all physician assistants or physician assistants in other states.
- 2) The study was limited to physician assistants. Therefore this study does not represent all medical providers in the State of Ohio.

3) The completion of the survey was voluntary. Therefore some physician assistants choose not to complete the questionnaire, thus limiting sample size.

4) The responses were self-reported.

Basic assumptions. The following were the basic assumptions of the design:

(a) The questionnaire respondents' interpretation of the questions was accurate; (b) The questionnaire respondents answered in an honest and thoughtful manner; (c) An existing research tool developed by Ulbrich et al. (2010) was used with permission and adapted for PAs; and (d) The questionnaire was previously tested for validity by Ulbrich and colleagues.

Instrumentation

The awareness and utilization of the Ohio Automated Rx Reporting System by PAs was assessed using a twenty-six-question self-reported survey that was developed by Ulbrich et al. (2010). The questionnaire was used with permission and adapted for PAs (Appendix D). All PAs actively licensed to practice in the State of Ohio with an email address on file as of February 25, 2014 were contacted electronically and asked to voluntarily participate in this study.

The survey contained questions regarding factors influencing enrollment or non-enrollment, impact of OARRS on daily practice, previous OARRS education received knowledge of OARRS, and demographics. Skip-logic (a method to direct the respondent to the next question based on response to the previous question) was used, and those enrolled in OARRS answered 25 questions and those not enrolled in OARRS answered 17 questions. Both groups answered a common set of 16 questions (one question regarding enrollment, two questions regarding OARRS education, three questions regarding knowledge of OARRS, nine demographic-type questions, and one open-ended question). Non-enrolled PAs answered an additional question regarding factors influencing non-enrollment and enrolled PAs answered two

additional questions regarding factors influencing enrollment, two questions on use of OARRS, and five questions on the impact of OARRS on daily practice. The survey contained three Likert scale questions (1 = *not important at all*; 3 = *neither*; 5 = *very important*) to assess the primary objective (factors influencing enrollment and utilization). No part of the survey identified the respondent.

Pilot Study

A pilot study was conducted using three PAs at a large university-based medical center. Each participant voluntarily participated. The participants agreed to participate in the pilot study knowing that their responses were anonymous but that the researcher would be contacting each of the participants after the survey completion for feedback. The three participants received the same email that included the cover letter, and link to the consent form and electronic survey. The survey responses were collected via SurveyMonkey. After all three participants completed the survey they were contacted for feedback regarding the study. All three participants agreed that the email was clear and concise and that the research questions were clear. The three participants found that the language was clear in the twenty-six question survey and easy to access. The instructions were clear and the survey smoothly transitioned between questions. Without prompting, all three participants verbalized the importance of the potential outcome of the survey results. The participants felt that the questions were appropriate and effective for the subject matter.

Data Collection

This study examined the awareness and utilization of the Ohio Automated Rx Reporting System by PAs. The researcher utilized an online survey developed and administered via SurveyMonkey. The survey is a twenty-six question survey used with permission from Timothy

Ulbrich (cf. Ulbrich et al., 2010) and adapted for PAs. To increase response rate, a modified Dillman Tailored Design Method (this method encourages using multiple contacts for survey type research) was used (Dillman, 2009). The first round of email communication containing the cover letter and electronic survey link was sent November 1, 2014. A follow up email containing the same letter and electronic survey link was sent December 1, 2014.

Data Analyses

Quantitative analysis. The data from PAs' responses were downloaded from SurveyMonkey as a .csv file. Data were converted to numerical—either scaled or ordinal—or nominal coding to facilitate analysis in SPSS. The data were examined first in relationship to the hypotheses and then further, if deemed appropriate.

To assess PA awareness of the OARRS program, descriptive statistics were used and delineated PAs into two categories of enrolled in the OARRS or not enrolled in the OARRS.

To evaluate if PAs utilized the OARRS, the data were further examined using descriptive statistics to determine if the PAs' were actively utilizing (had requested at least one OARRS report in the last twelve months) the OARRS or not.

Potential factors influencing a PA's decision to enroll in OARRS or not were considered using several statistical methods. Descriptive statistics from ranking of factors influencing a decision not to enroll were reviewed. The Wilcoxon Signed-Rank test was used for further analysis of the reported importance of factors influencing decision to enroll or to not enroll in the OARRS and compared factors to identify significant differences in influence.

Multinomial logistical regression was used to decide if relationships exist between demographic information (self-reported specialty, previous OARRS education and the PAs' decision to enroll in OARRS. A five-way loglinear analysis was performed to determine a

hierarchical unsaturated model for the associations among enrollment, specialized training in pain management, pain management in the daily setting, graduate of Ohio program, and gender. Finally, ordinal regressions were run to see if there is a relationship between the PAs' decision to enroll in OARRS and years of practice or the knowledge of the OARRS and the likelihood that participants have enrolled.

Potential factors influencing a PA's decision to use the OARRS or not were considered using several statistical methods. Descriptive statistics from ranking of factors influencing a decision to use OARRS were reviewed. The Wilcoxon Signed-Rank test and a logistic regression were used for analysis of the reported importance of factors influencing the PA's decision to utilize the OARRS.

Descriptive statistics were used to determine if a PA altered their prescribing plan based on OARRS results.

Secondary analysis. A comparison of importance of common factors influencing enrollment in OARRS was completed using descriptive statistics. Examination of relationships between the PAs decision to enroll in OARRS or not and preferences for OARRS education format was evaluated. A Pearson chi-square test for association was conducted between enrollment status and preference for education about the OARRS. The Mann-Whitney U Test was used to compare frequency of use of the OARRS to drug schedule most often leading to a request for an OARRS report, the decision to deny medication based on the report, contacting a supervising physician based on the finding in a report, and the use of OARRS by the supervising physician. Continued analysis was done using the Kruskal-Wallis H Test. The self-reported

frequency of use OARRS by the PA was compared to the self-reported influence of the factors on the decision to use the OARRS.

SPSS software was used by the researcher. All statistics were set at the .05 level of significance.

CHAPTER 4

RESULTS

The purpose of this chapter is to report and discuss the results of the statistical analysis as they pertain to the hypotheses. The data were acquired through the development, collection, and analysis of the survey responses. The study investigated the awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants. This chapter is divided into the following sections: (1) rate of return; (2) hypotheses testing; (3) secondary analysis; and (4) summary.

Rate of Return

The twenty-six question, self-reported survey was uploaded to SurveyMonkey and an electronic link to the survey. Upon reviewing the list of actively licensed PAs provided by the State of Ohio Medical Board ($N = 2,563$ as of February, 25, 2014), it was found that 173 PAs did not provide an email and 43 of the email addresses were duplicates. After removing myself from the email list and adjusting for the aforementioned changes, on November 1, 2014 a first round email was sent to 2,346 PAs licensed in the State of Ohio. Of those 2,346 email addresses, 52 emails were returned as undeliverable. Subsequently those unusable email addresses were removed and 2,294 PAs were sent a second round email reminder on December 1, 2014 that again contained the electronic survey link. Additionally after the second round, ten emails returned undeliverable. As of December 13, 2014, 359 PAs responded to the, a response rate of 15.6%. A follow up email was sent to all the PAs' emails. PAs who had previously responded were not excluded. Therefore, there is no way to determine if a PA completed the survey more than once.

Descriptive statistics. Of the sample respondents ($N = 355$), 64.54% were female and 35.46% were male and 65.81% of the respondents reported graduating from a PA school in the State of Ohio. Just over half (53.99%) of the respondents reported they do not practice in a setting where they assist with pain management on a daily basis. The majority (94.89%) of the respondents reported they have not completed any specialized training in pain management.

Years of practice as a physician assistant had the following breakdown among respondents; 32.59% reported practicing from 1–5 years, 24.28% for 6–10 years, 22.68% for 11–15 years, 8.95% for 16–20 years, 3.51% for 21–25 years, 3.51% for 26–30 years, and 4.47% for 30 or more years.

When asked about primary practice setting, the top three responses were not-for profit community hospital (33.55%), ambulatory care clinic (22.68%), and for profit hospital (16.29%). Government agency 1.28%, nursing home/long term care 0.96%, and home care organization 0.00% were the least selected practice settings.

The top four specialties reported by respondents were emergency medicine (37.06%), family medicine (13.74%), internal medicine (12.14%), and orthopedics (10.54%). obstetrics/gynecology (1.92%), physiatry (1.60%), and infectious disease (0.32%) were the three least reported specialties.

Age was not included in the analysis model because it was highly correlated with years of practice. Access to the internet was also excluded from the analysis model as 99.68% of respondents reported having access to the internet at work.

Analysis of hypotheses

Hypothesis one. A total of 2,346 of the 2,563 PAs actively licensed to practice in the state of Ohio were contacted to participate. Three hundred and fifty-nine PAs responded to the

survey. Of the 355 PAs who responded, 73.80% indicated that they were currently enrolled in OARRS and 26.20% indicated they were not enrolled in OARRS (it is understood that if a PA is not enrolled, then they were not using OARRS). For the purpose of this study awareness is equal to enrollment. With approximately three of four responding PAs reporting enrollment in the OARRS, null hypothesis number one; physician assistants actively licensed to practice in the state of Ohio are unaware of the OARRS should be rejected.

Hypothesis two. Of the 327 responses, 82 reported not being enrolled and therefore are not using the OARRS. Of the 245 PAs reporting enrollment in OARRS, 10 (4.08%) reported no use in the past month. This means 92 of the 327 PAs (28.13%) indicated not using the OARRS. Of the 235 PAs reporting use of the OARRS in the last month, 30.92% reported 1 to 5 requests, 20.77% reported 6 to 10 requests, 21.74% reported 11 to 20 requests and 26.57% reported more than 20 requests for an OARRS report in the past month. Of the enrolled physician assistants utilizing OARRS, 74.04% reported average use the OARRS as weekly, daily, or for every controlled substance prescription. Of this same group, 25.96% reported average use the OARRS as rarely or at most monthly.

Data shows that 71.87% of responding physician assistants actively licensed to practice in the state of Ohio do utilize the OARRS and of those enrolled in OARRS, 74.04% report an average use of at least once per week. Based on the data, we must reject null hypothesis number two; physician assistants actively licensed to practice in the state of Ohio do not utilize the OARRS.

Hypothesis three. Potential factors influencing a PA's decision to enroll in OARRS or not were considered using several statistical methods. Descriptive statistics from ranking of factors influencing a decision not to enroll were reviewed. The Wilcoxon Signed-Rank test was

used for further analysis of the reported importance of factors influencing decision to enroll or to not enroll in the OARRS and compared factors to identify significant differences in influence.

Multinomial logistical regression was used to decide if relationships exist between demographic information (self-reported specialty, previous OARRS education and the PA's decision to enroll in OARRS). A five-way loglinear analysis was performed to determine a hierarchical unsaturated model for the associations among enrollment, specialized training in pain management, pain management in the daily setting, graduate of Ohio program, and gender. Finally, ordinal regressions were run to see if there is a relationship between the PA's decision to enroll in OARRS and years of practice or the knowledge of the OARRS and the likelihood that participants have enrolled.

Respondents not enrolled in OARRS were asked to rate the importance of seven factors influencing their decision not to enroll. The two the factors with the highest percentage of very important or somewhat important responses were understanding the law surrounding the OARRS database (54.88%) and usefulness to their practice (56.79%). The factors with the lowest percentage of very important or somewhat important responses were availability of internet access at work (30.49%) and concern with having to confront a patient if there is any suspicion of doctor shopping or drug abuse (28.05%). The data are summarized in Table 1.

Table 1

Factors Influencing the PA's Decision Not to Enroll in the OARRS

Factors	Very Important or Somewhat Important	Not Important or Somewhat Not Important	Mean	Standard Deviation
Awareness of the OARRS	48.78%	25.61%	3.263	1.447
Availability of internet access at work	30.49%	47.56%	2.563	1.457
Understanding of the law surrounding the OARRS	54.88%	24.39%	3.463	1.449
Concern with confronting patients	28.05%	52.44%	2.538	1.359
Usefulness to the practice	56.79%	25.93%	3.430	1.456
Time available at work to access the OARRS	48.78%	23.17%	3.375	1.325
Time available to enroll in the OARRS	50.00%	20.73%	3.400	1.327

Respondents enrolled in OARRS were asked to rate the importance of seven factors influencing their decision to enroll. Overall, the highest importance was given to being able to assist with decreasing drug diversion (93.25%) and usefulness at the practice site (92.83%) or being able to assist with decreasing doctor shopping (92.38%). The factor that appears to be the least influential is education received about the OARRS (37.55%). The data are summarized in Table 2.

Table 2

Factors Influencing the PA's Decision to Enroll in the OARRS

Factors	Very Important or Somewhat Important	Not Important or Somewhat Not Important	Mean	Standard Deviation
Education received about OARRS	37.55%	43.04%	2.839	1.349
Recommendation to enroll from colleague and/or employer	75.53%	13.92%	3.928	1.228
Knowledge of the law surrounding the OARRS database	74.68%	8.02%	3.992	1.050
Usefulness at your practice site	92.83%	3.80%	4.525	0.848
Experience or situation at work using the OARRS	83.12%	5.91%	4.232	1.017
Being able to assist with decreasing drug diversion	93.25%	1.27%	4.623	0.682
Being able to assist with decreasing "doctor shopping"	92.83%	2.11%	4.620	0.736

The Wilcoxon Signed-Rank test was used for further analysis of the reported importance of factors influencing decision not to enroll in the OARRS and compared factors to identify significant differences in influence. Seven items were rated by not enrolled respondents to identify factors that that may have influenced their non-enrollment decision. These were (1) awareness of the OARRS, (2) availability of internet access at work, (3) understanding of the law surrounding the OARRS, (4) concern with confronting patients, (5) usefulness to the practice, (6) time available at work to access the OARRS and (7) time available to enroll in the OARRS.

Education received about the OARRS was significantly less important than all other choices (each $p < 0.001$). The ability to assist with decreasing drug diversion was significantly more influential than education received about the OARRS ($Z = -11.51, p < 0.001$), recommendation to enroll from a colleague or employer ($Z = -7.27, p < 0.001$), knowledge of the associated laws ($Z = -7.39, p < 0.001$), and experience or situation at work using the OARRS ($Z = -5.71, p < 0.001$). Similarly, being able to assist with decreasing “doctor shopping” was significantly more influential than education received about the OARRS ($Z = -11.34, p < 0.001$), recommendation to enroll from a colleague or employer ($Z = -7.30, p < 0.001$), knowledge of the associated laws ($Z = -7.15, p < 0.001$), and experience or situation at work using the OARRS ($Z = -5.82, p < 0.001$). Usefulness at the practice site was found to be significantly more influential than education received about the OARRS ($Z = -10.96, p < 0.001$), recommendation to enroll from a colleague or employer ($Z = -6.11, p < 0.001$), knowledge of the associated laws ($Z = -6.15, p < 0.001$), and experience or situation at work using the OARRS ($Z = -5.03, p < 0.001$).

The Wilcoxon Signed-Rank test was used for similar analysis of the reported importance of factors influencing a decision to enroll in the OARRS and compared factors to identify significant differences in influence. Seven items were rated by enrolled respondents to identify factors that that may have influenced enrollment. These were (1) education received about the OARRS, (2) recommendation to enroll from a colleague or employer, (3) knowledge of the associated laws, (4) usefulness at the practice site, (5) experience or situation at work using the OARRS, (6) ability to assist with decreasing drug diversion and (7) being able to assist with decreasing “doctor shopping.” The three strongest factors in order of greatest influence were (6) ability to assist with decreasing drug diversion, (7) being able to assist with decreasing “doctor shopping,” and (4) usefulness at the practice site, respectively.

Table 3

Factors Influencing Enrollment in the OARRS for PAs Already Enrolled

Factors	Mean	Standard Deviation
Education received about the OARRS	2.839	1.345
Recommendation to enroll from a colleague or employer	3.928	1.228
Knowledge of the associated laws	3.992	1.050
Usefulness at the practice site	4.525	0.848
Experience or situation at work using the OARRS	4.232	1.017
Ability to assist with decreasing drug diversion	4.632	0.682
Being able to assist with decreasing “doctor shopping”	4.620	0.736

Using the Wilcoxon Signed-Rank test, analysis of the reported importance of factors influencing decision to enroll in the OARRS compared factors to identify significant differences in influence. Education received about the OARRS was significantly less important than all other choices (each $p < 0.001$). The ability to assist with decreasing drug diversion was significantly more influential than education received about the OARRS ($Z = -11.51, p < 0.001$), recommendation to enroll from a colleague or employer ($Z = -7.27, p < 0.001$), knowledge of the associated laws ($Z = -7.39, p < 0.001$), and experience or situation at work using the OARRS ($Z = -5.71, p < 0.001$). Similarly, being able to assist with decreasing “doctor shopping” was significantly more influential than education received about the OARRS ($Z = -11.34, p < 0.001$), recommendation to enroll from a colleague or employer ($Z = -7.30, p < 0.001$), knowledge of the associated laws ($Z = -7.15, p < 0.001$), and experience or situation at work using the OARRS ($Z = -5.82, p < 0.001$). Usefulness at the practice site was found to be significantly more influential

than education received about the OARRS ($Z = -10.96, p < 0.001$), recommendation to enroll from a colleague or employer ($Z = -6.11, p < 0.001$), knowledge of the associated laws ($Z = -6.15, p < 0.001$), and experience or situation at work using the OARRS ($Z = -5.03, p < 0.001$).

A multinomial logistical regression was run to examine prior education about the OARRS and the self-reported specialty. Four specialties, infectious disease ($n = 1$), pediatrics ($n = 7$), physiatry ($n = 5$), and psychology ($n = 7$), were removed due to low reporting. The results suggest that four statistically significant prior education factors may predict enrollment in the OARRS by PAs. The factors are prior education received through continuing education (CE)—live or printed ($p = .009$), workplace education ($p = .010$), and State Board of Medicine newsletter ($p = .019$). None of the self-reported specialties were found to be significant.

Table 4

Relationship of PAs' Enrollment to Specialty and Prior Education about the OARRS

Enrollment	Parameter Estimates					95% Confidence Interval for Exp(B)		
	B	Std. Error	Wald	df	Sig.	Exp(B)	Lower Bound	Upper Bound
Intercept	-3.563	1.759	4.104	1	.043			
Specialty:								
[1-Anesthesia]	-1.528	1.401	1.189	1	.275	.217	.014	3.381
[2-Cardiology]	2.280	1.394	2.674	1	.102	9.776	.636	150.269
[3-Emergency Medicine]	-.742	.932	.634	1	.426	.476	.077	2.956
[4-Family Medicine]	-.198	.981	.041	1	.840	.820	.120	5.609
[5-General Surgery]	-.174	1.036	.028	1	.866	.840	.110	6.396
[7-Internal Medicine]	.337	.965	.122	1	.727	1.401	.211	9.287
[8-Neurology]	.274	1.169	.055	1	.814	1.316	.133	12.997
[9-OB/GYN]	.217	1.294	.028	1	.867	1.242	.098	15.677
[10-Orthopedics]	-.432	.992	.190	1	.663	.649	.093	4.537
Previous Education:								
[None]	.125	.513	.059	1	.808	1.133	.415	3.095
[Lectures/college]	-.405	.653	.385	1	.535	.667	.185	2.399
[CE-live/printed]	1.482	.571	6.742	1	.009*	4.402	1.438	13.476
[Workplace educ.]	1.073	.414	6.709	1	.010*	2.923	1.298	6.580
[Supervising Phys.]	.476	.426	1.252	1	.263	1.610	.699	3.710
[State Bd. of Med. Newsletter]	1.089	.465	5.487	1	.019*	2.971	1.195	7.391
[Article/journal or magazine]	-.086	.822	.011	1	.916	.917	.183	4.592

Note. * p< .05

A five-way loglinear analysis was performed to determine a hierarchical unsaturated model to compare associations between enrollment, specialized training in pain management, pain management in the daily setting, graduate of an Ohio PA program, and gender. A hierarchical loglinear analysis was used for secondary review. There were 307 participants who responded. This produced a model that included all main effects and two two-way associations of enrollment with specialized training, enrollment with pain management in the setting, enrollment with Ohio PA program, and enrollment with gender. The model had a likelihood ratio of $\chi^2(2) = 3.805$, $p = .956$. Two statistically significant relationships appear, between enrollment and pain management training and Ohio PA program ($p = .041$), and enrollment with Ohio PA program ($p = .023$).

Table 5

Associations Between PA Enrollment in OARRS, Specialized Pain Management Training, Pain Management in Setting, Ohio Program Graduate, and Gender

Effect	df	Partial Chi-Square	Sig.
Enrollment-Pain Mgt. Training-Daily Pain Mgt.-Ohio PA Program	1	.000	1.000
Enrollment-Pain Mgt. Training-Daily Pain Mgt.-Gender	1	.000	.998
Enrollment-Pain Mgt. Training-Ohio PA Program-Gender	1	.360	.548
Enrollment-Daily Pain Mgt.-Ohio PA Program-Gender	1	.497	.481
Pain Mgt. Training-Daily Pain Mgt.-Ohio PA Program-Gender	1	.001	.979
Enrollment-Pain Mgt. Training-Daily Pain Mgt.	1	1.584	.208
Enrollment-Pain Mgt. Training-Ohio PA Program	1	4.185	.041*
Enrollment-Daily Pain Mgt.-Ohio PA Program	1	1.418	.234
Pain Mgt. Training-Daily Pain Mgt.-Ohio PA Program	1	.208	.649
Enrollment-Pain Mgt. Training-Gender	1	1.364	.243
Enrollment-Daily Pain Mgt.-Gender	1	1.523	.217
Pain Mgt. Training-Daily Pain Mgt.-Gender	1	2.004	.157
Enrollment-Ohio PA Program-Gender	1	1.836	.175
Pain Mgt. Training-Ohio PA Program-Gender	1	2.439	.118
Daily Pain Mgt.-Ohio PA Program-Gender	1	.708	.400
Enrollment-Pain Mgt. Training	1	1.844	.174
Enrollment-Daily Pain Mgt.	1	.045	.832
Pain Mgt. Training-Daily Pain Mgt.	1	.039	.844
Enrollment-Ohio PA Program	1	5.191	.023*
Pain Mgt. Training-Ohio PA Program	1	.179	.672
Daily Pain Mgt.-Ohio PA Program	1	.299	.585
Enrollment-Gender	1	.026	.872
Pain Mgt. Training-Gender	1	.148	.700
Daily Pain Mgt.-Gender	1	.501	.479
Ohio PA Program-Gender	1	.727	.394
Enrollment	1	77.599	.000*
Pain Mgt. Training	1	299.905	.000*
Daily Pain Mgt.	1	1.725	.189
Ohio PA Program	1	31.180	.000*
Gender	1	24.996	.000*

Note. * $p < .05$

The results of an ordinal regression suggest that no statistically significant relationship exists between the PA's decision to enroll in OARRS and years of practice.

Table 6

Relationship of PA's Decision to Enroll in OARRS and Years of Practice

		Variables in the Equation					Exp(B)
		B	S.E.	Wald	df	p	
Step 1 ^a	Yrs of Practice	-.019	.016	1.491	1	.222	.981
	Constant	1.256	.199	39.767	1	.000*	3.512

a. Variable(s) entered on step 1: Q20.

Note. * p< .05

A second binary logistic regression was performed to ascertain the effect knowledge of the OARRS on the likelihood that participants have enrolled. The logistic regression model was statistically significant, $\chi^2(1) = 16.236, p < .0005$. The level of knowledge about the OARRS may be a predictor of enrollment.

Table 7

The Effect of Knowledge of the OARRS on the Likelihood of Enrollment

		Variables in the Equation					Exp(B)
		B	S.E.	Wald	df	p	
Step 1 ^a	Knowledge	.347	.090	14.751	1	.000*	1.415
	Constant	-1.471	.660	4.963	1	.026*	.230

a. Variable(s) entered on step 1: Knowledge.

Note. * p< .05

From this analysis, one may conclude that prior education through continuing education (CE)-live/printed, workplace education, the State Board of Medicine Newsletter, receiving specialized pain management training, being a graduate of an Ohio PA program, and level of knowledge about the OARRS may be factors predicting enrollment in the OARRS.

Based on the data, we must reject null hypothesis number three; no factors are predictive of

awareness of OARRS by physician assistants actively licensed to practice in the state of Ohio.

Hypothesis four. Potential factors influencing a PA's decision to utilize OARRS were considered using several statistical methods. Descriptive statistics from ranking of factors influencing a decision to use OARRS were reviewed. The Wilcoxon Signed-Rank test and a logistic regression were used for analysis of the reported importance of factors influencing the PA's decision to utilize the OARRS.

Respondents enrolled in OARRS were asked to rate the importance of seven factors influencing their decision to utilize the database. These were (1) availability of internet access at the workplace, (2) knowledge of the laws surrounding the OARRS database, (3) concern with having to confront a patient if there is suspicion of doctor shopping or drug abuse, (4) prescribing behaviors of providers in local area, (5) usefulness to practice site, (6) time available at work to access an OARRS report, and (7) previous interactions with a patient. Descriptive statistics indicate the greatest percentage of very important or somewhat important influences were identified as usefulness at the practice site (91.14%) and availability of internet access at the workplace (88.19%). The factor that appears to be the least influential was prescribing behaviors in your local area (41.95%). Looking only at the PAs who are enrolled in the OARRS but utilizing the database ($n = 8$), the most influential factor (very important or somewhat important) was identified as knowledge of the OARRS database (100%) and the least influential was previous interactions with a patient (37.5%). The data are summarized in Table 8.

Table 8

Factors Influencing the PA's Decision to Utilize the OARRS

Factors	Very Important or Somewhat Important	Not Important or Somewhat Not Important	Mean	Standard Deviation
Availability of internet access at the workplace	88.19%	8.02%	4.414	1.003
Knowledge of the laws surrounding the OARRS database	72.88%	10.17%	3.890	1.180
Concern with having to confront a patient if there is suspicion of doctor shopping or drug abuse	62.45%	30.385	3.532	1.550
Prescribing behaviors of providers in local area	41.95%	30.15%	3.123	1.374
Usefulness to practice site	91.14%	2.53%	4.443	0.777
Time available at work to access an OARRS report	70.89%	14.77%	3.781	1.212
Previous interactions with a patient	76.69%	13.14%	3.919	1.223

The Wilcoxon Signed-Rank Test was used for further analysis of the medians of the reported importance of factors influencing the PA's decision to utilize the OARRS and compared the seven factors to identify significant differences in influence.

Table 9

Comparison of Medians for Rating of Influences for PA's Decision to Use OARRS

	Knowledge of OARRS laws	Patient confrontation	Prescribing behaviors	Value to practice	Time available to access	Previous patient interaction
Internet access at work	Z=-6.018 p=.000*	Z=-7.008 p=.000*	Z=-9.127 p=.000*	Z=.204 p=.838	Z=-6.596 p=.000*	Z=-4.847 p=.000*
Knowledge of OARRS laws		Z=-3.057 p=.002*	Z=-6.431 p=.000*	Z=6.008 p=.000*	Z=-1.054 p=.292	Z=.546 p=.585
Patient confrontation			Z=-3.089 p=.002*	Z=7.631 p=.000*	Z=2.379 p=.017*	Z=3.673 p=.000*
Prescribing behaviors				Z=10.099 p=.000*	Z=5.535 p=.000*	Z=6.932 p=.000*
Value to practice					Z= -7.212 p=.000*	Z= -6.260 p=.000*
Time available to access						Z=1.450 p=.147

Note. * p< .05

The results of the Wilcoxon Signed-Rank Test allow us to compare median difference of factors influencing the decision to use OARRS. The ranking of the factors from most influential to the least for the decisions to use the OARRS are: usefulness to practice site, availability of internet access at the workplace, previous interactions with a patient, knowledge of the laws surrounding the OARRS database, time available to access a report, concern with confronting a patient, and prescribing behaviors of local providers.

A logistic regression was used to examine the relationships between use and non-use by enrolled PAs and the seven influences. From this, the only factor with statistical significance is usefulness to the practice ($p = .013$). However, knowledge of the laws surrounding the OARRS database ($p = .070$) may be of interest.

From this analysis, one may conclude that usefulness to practice site and availability of internet access at the workplace may be factors predicting use of the OARRS. Based on the data, we must reject null hypothesis number four; no factors are predictive of utilization of OARRS by physician assistants actively licensed to practice in the state of Ohio.

Hypothesis five. Descriptive statistics were used initially to determine if results from an OARRS report would alter the prescriptive plan of the PA. For this analysis, the responses were confined to those who are both enrolled and utilizing the OARRS. Schedule II or Schedule III drugs were identified by 94.45% of these respondents as most often leading them to request an OARRS report. Table 10 shows what schedule of medication most often prompted an enrolled PA to request an OARRS report.

Table 10

Drug Types Most Likely Leading to Request of OARRS Report

Drug Schedule	Number	Percentages
Schedule II	159	67.95%
Schedule III	62	26.50%
Schedule IV	11	4.70%
Schedule V	2	0.85%
No Response	2	0.85%

Note. Only PAs enrolled in OARRS responded.

Responses also indicate 90.25% of these PAs have denied prescribing medications to a patient based on an OARRS report and 83.47% responded that they have contacted a supervising physician based on the findings on an OARRS report.

The PAs enrolled in and utilizing OARRS were asked about the importance of the OARRS report in the decision process when prescribing controlled medications. Figure 1 illustrates the perceived importance of running an OARRS report when prescribing controlled medications.

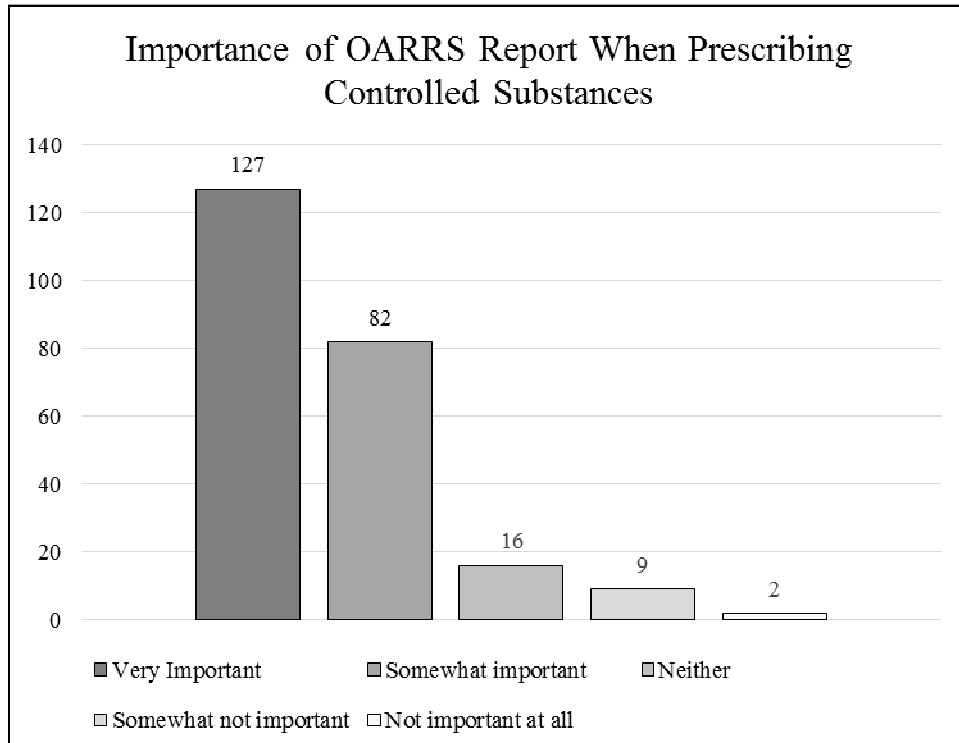


Figure 1. The importance of OARRS report when prescribing controlled substances. It is important to note that only PAs enrolled in OARRS responded.

In summary, 84.47% of the utilizing PAs consider the OARRS report very important or somewhat important to the decision process when dispensing a prescription for controlled substances, 90.25% indicate they have denied prescribing medications to a patient based on an OARRS report, and 83.47% responded that they have contacted a supervising physician based on the findings on an OARRS report. From this analysis, one may conclude that the majority of enrolled and utilizing PAs have altered their prescribing plans based on the findings of an OARRS report. Based on the aforementioned data, we must reject null hypothesis number five; physician assistants actively licensed to practice in the state of Ohio do not alter their prescribing plans as a result of utilization of OARRS.

Secondary Analysis

Following examination of the five hypotheses, secondary analysis was undertaken. The purpose is to explore data in a manner that might not be directly supportive of the hypotheses. A closer look at two questions asked of both enrolled and non-enrolled users was of interest. Each rated the importance of common factors influencing enrollment or non-enrollment in OARRS. Descriptive statistics highlight notable differences in importance of these two common factors influencing a PA's decision to enroll in OARRS or not; knowledge of laws about OARRS use and usefulness of OARRS to the PA's practice. Table 11 shows the results. This difference could be further explored in future research.

Table 11

Comparison of Importance of Common Factors Influencing Enrollment in OARRS

	Knowledge of Laws		Usefulness to Practice	
	Not Enrolled n=82	Enrolled n=237	Not Enrolled n=81	Enrolled n=237
Median	4	4	4	5
Mean	3.451	3.992	3.407	4.525
SD	1.467	1.050	1.447	0.848
Very important or somewhat important	54.88%	74.68%	56.79%	92.83%
Not important or somewhat not important	24.39%	8.02%	25.93%	3.80%

Using descriptive statistics, a comparison of preferences for OARRS education by enrolled and non-enrolled PAs was explored. Figure 2 illustrates the findings.

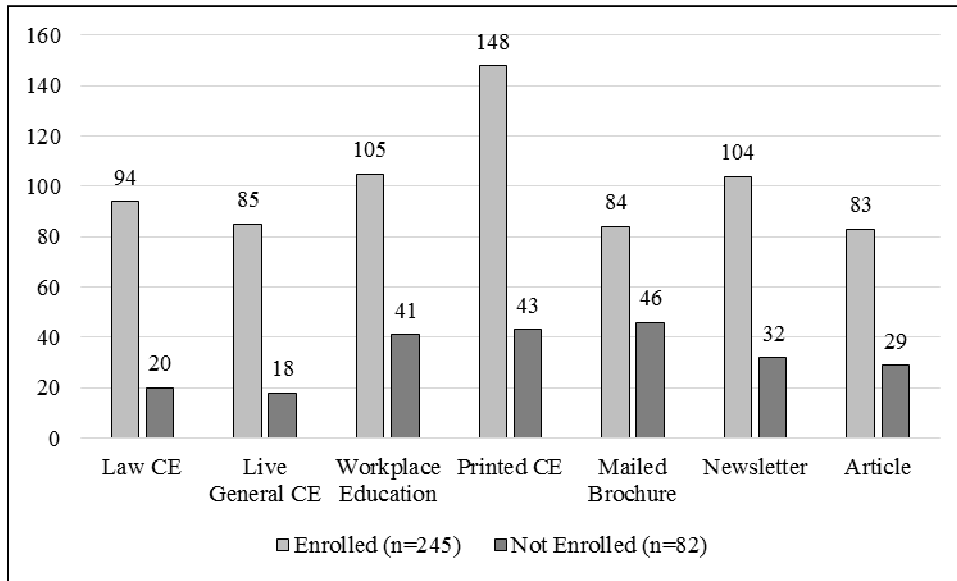


Figure 2. Preference for types of education about OARRS.

A Pearson chi-square test for association was conducted between enrollment status and preference for education about the OARRS (see Table 12). All expected cell frequencies were greater than five. There was a statistically significant association between enrollment and preference for each of three different types of education: law continuing education about the OARRS, $\chi^2(1)= 5.285$, $p=.022$, Phi (ϕ)= .127, live general continuing education, 5.623 , $p=.032$, Phi (ϕ)= .119 and mailed brochure, $\chi^2(1)= 12.204$, $p<.001$, Phi (ϕ)= -.193.

Table 12

Association between Enrollment Status and Preferences for Education about the OARRS

Type of Education about OARRS	Chi Square	Sig.	
Law CE	$\chi^2(1)= 5.285$	p=.022*	<i>Phi (ϕ)= .127</i>
Live General CE	$\chi^2(1)= 5.623$	p=.032*	<i>Phi (ϕ)= .119</i>
Workplace Education	$\chi^2(1)= 1.268$	p=.260	
Printed CE	$\chi^2(1)= 1.606$	p=.205	
Mailed Brochure	$\chi^2(1)= 12.204$	p=.000*	<i>Phi (ϕ)= -.193</i>
State Board of Medicine Newsletter	$\chi^2(1)= .297$	p=.586	
Article in Journal or Magazine	$\chi^2(1)= .060$	p=.806	

Note. * p< .05

The Mann-Whitney U Test (see Table 13.) was used to compare frequency of use of the OARRS to drug schedule most often leading to a request for an OARRS report, the decision to deny medication based on the report, contacting a supervising physician based on the finding in a report, and the use of OARRS by the supervising physician. The drug schedule most often leading to a request for an OARRS report (p=.068) does not show a statistically significant difference with frequency of use so this may suggest a significance between frequency of use and drug schedule most often leading to a request for an OARRS report. A statistically significant difference was found between the decision to deny medication based on the report (p=.000), contacting a supervising physician based on the finding in a report (.005), and the use of OARRS by the supervising physician (.002). A conclusion might be made that these three factors are not related to frequency of use.

Table 13

Frequency of OARRS Use and the Rating of Factors on the PA's Decision to Use OARRS

Null Hypothesis: The distribution of Frequency of Use is the Same Across Categories of Factors	Sig.
Drug schedule most often leading to a request for an OARRS report	.068
Decision to deny medication based on the report	.000*
Contacting a supervising physician based on the finding in a report	.005*
Use of OARRS by the supervising physician	.002*

Note. * $p < .05$, Asymptotic significances are displayed. The significance level is .05.

Continued analysis was done using the Kruskal-Wallis H Test (see Table 14). The self-reported frequency of use OARRS by the PA was compared to the self-reported influence of the factors on the decision to use the OARRS. The knowledge of the laws surrounding the OARRS database ($p = .340$), prescribing behaviors of providers in the local area ($p = .574$), and time available at work to access and OARRS report ($p = .707$) were not statistically different from frequency of use. A conclusion might be made that these factors have statistically significant relationships to frequency of use.

Table 14

Frequency of OARRS Use and the Rating of Influences on the PA's Decision to Use OARRS

Null Hypothesis: The distribution of Frequency of Use of OARRS is the Same Across Categories of Influences	Sig.
Availability of internet access at the workplace	.002*
Knowledge of the laws surrounding the OARRS database	.340
Concern with confronting a patient about suspected abuse or misuse	.000*
Prescribing behaviors of providers in local area	.574
Usefulness to practice site	.000*
Time available at work to access an OARRS report	.707
Previous interactions with a patient	.020*

Note. * $p < .05$, Asymptotic significances are displayed. The significance level is .05.

CHAPTER 5

DISCUSSION

The primary purpose of this study was to examine the awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants. The literature surrounding awareness of PDMPs and their use by medical providers is vague. Previous literature revealed a severe under-utilization of the OARRS program (Woodworth, 2013). In 2010, Foxhall found that only 20% of prescribers were signed up to use OARRS. The Columbus Dispatch (2010) found similar results revealing that approximately 13% of Ohio's licensed providers were registered to use OARRS. No research had explored awareness and utilization of the Ohio Automated Rx Reporting System by PAs.

With the number of PAs who have prescriptive rights rising, and mixed results of earlier research on the awareness and utilization of state PDMPs clear need for further investigation of the awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants was identified.

All five null hypotheses were rejected (1) Physician assistants actively licensed to practice in the state of Ohio are unaware of the OARRS (2) Physician assistants actively licensed to practice in the state of Ohio do not utilize the OARRS (3) No factors are predictive of awareness of OARRS by physician assistants actively licensed to practice in the state of Ohio (4) No factors are predictive of utilization of OARRS by Physician assistants actively licensed to practice in the state of Ohio and (5) Physician assistants actively licensed to practice in the state of Ohio do not alter their prescribing plans as a result of utilization of OARRS).

Results indicated that 73.80% of Ohio PAs were currently enrolled in OARRS and

26.20% were not enrolled in OARRS. Data also showed that 71.87% of responding physician assistants actively licensed to practice in the state of Ohio do utilize the OARRS and of those enrolled in OARRS, 74.04% report an average use of at least once per week.

From this analysis, one may conclude that desire to decrease drug abuse/misuse, prior education through continuing education (CE)-live/printed, workplace education, the State Board of Medicine Newsletter, receiving specialized pain management training and being a graduate of an Ohio PA program, being a graduate of an Ohio PA program, and level of knowledge about the OARRS may be factors predicting enrollment in the OARRS. Years of practice, and self-reported specialties were not significant predictors of a PAs decision to enroll in OARRS. The two the factors with the highest percentage in influencing a PAs decision not to enroll were understanding the law surrounding the OARRS database (54.88%) and usefulness to their practice (56.79%).

From this analysis, one may surmise that OARRS usefulness to practice site and availability of internet access at the workplace may be factors predicting use of the OARRS. Based on the data, we must reject null hypothesis number four; no factors are predictive of utilization of OARRS by physician assistants actively licensed to practice in the state of Ohio.

Results indicate that 84.47% of the utilizing PAs consider the OARRS report very important or somewhat important to the decision process when dispensing a prescription for controlled substances, and 90.25% indicate they have altered their prescribing plan and denied prescribing medications to a patient based on an OARRS report.

Ohio House Bill 341 was passed in September 16, 2014 (Ohio Revised Code Sec 4730.53. (A)- Sec. 4731.055. (E) of House Bill 341, 2014) stating that a prescriber of controlled substances must request and document the results of an OARRS report prior to prescribing any

medications. The aforementioned bill, combined with the results of this study, indicate a need to pursue further research in the area of utilization and awareness of the OARRS by PAs.

Implications of the Limitations on Present and Future Research

Limitations to this research were identified. First, a response rate of 15.6%, although respectable for survey-type research, may limit the external validity of the results. Secondly, the accuracy of the email addresses provided by the State of Ohio Medical Board and the potential for the email to be routed to a “junk mail” box did not allow for an accurate assessment of the number of PAs receiving the survey. Therefore the response rate reported most likely underestimated the actual response rate. Third, the responses to the questions were self-reported and responses to questions about practice setting may be interpreted differently amongst the respondents. And lastly, although conclusions may be hypothesized to other states with prescription drug monitoring programs, the findings of this research were based on physician assistants in Ohio and the Ohio prescription drug monitoring program (OARRS).

Recommendations

Practical application of results. In conclusion, initial efforts should be directed toward increasing PA awareness and enrollment in the OARRS. Specifically, education should be continued or developed focusing on law continuing education about the OARRS, providing live general continuing education, and utilizing a mailed brochure. This, in combination with CME focused on who should enroll in OARRS, how to use OARRS, when to use OARRS, and potential benefits of OARRS may enhance the safe and appropriate delivery of commonly abused and misused controlled medications.

Future research. Implications with respect to the results of this study warrant the following future research and policy recommendations:

1. Future studies utilizing a replication of the present study should be pursued by obtaining information from other states that utilize a prescription drug monitoring program.
2. Future studies utilizing a replication of the present study should be pursued by obtaining information from all providers who utilize the Ohio Automated Rx Reporting system.
3. Future studies utilizing a replication of the present study should be pursued and further delineate the notable difference in importance of common factors influencing a PA's decision to enroll in OARRS or not.
4. In light of the mixed results showing both positive and negative effects of state PDMPs, future studies should evaluate whether PDMPs create reduction in abuse and diversion or suboptimal pain treatment (Curtis et al., 2006).
5. The list of PAs kept by the State Board of Medicine should be updated more regularly to contact PAs to inquire if they are still practicing in Ohio and current contact information.

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APPENDIX A

DEA SCHEDULE OF MEDICATIONS

DEA Schedule	Abuse Potential	Example Drugs	Effects	Medical Use
I	Highest	Heroin, (LSD), Marijuana	Unpredictable effects, severe psychological or physical dependence, death	No accepted use
II	High	Methylphenidate, morphine, methadone, PCP, codeine, cocaine, Demerol, oxycodone	May lead to severe psychological or physical dependence	Accepted use with restrictions
III	Medium	Anabolic steroids, Tylenol with codeine, Ketamine	May lead to moderate physical dependence or high psychological dependence	Accepted use
IV	Low	Diazepam, clonazepam, midazolam	May lead to limited psychological or physical dependence	Accepted use
V	Lowest	Cough preparations containing codeine: Robitussin AC, Phenergan with Codeine	May lead to limited psychological or physical dependence	Accepted use

(Drug Enforcement Agency: Office of Diversion Control, 2013).

APPENDIX B

SURVEY COVER LETTER

November 1, 2014

Dear physician assistant:

I would like to request your participation in a doctoral study examining awareness and utilization of the Ohio Automated Rx Reporting System (OARRS) by physician assistants. While your participation is voluntary and anonymous, know that your participation has the potential to greatly impact the PA profession.

This survey is open to physician assistants actively licensed to practice in the State of Ohio. Physician assistants are being asked to complete a non-invasive twenty-six-question survey focused on use of the OARRS. Data will be beneficial to physician assistants within the state of Ohio, physician assistants in other states with prescription monitoring programs, as well as other medical providers in states with prescription drug monitoring programs.

My major advisor and committee discussed and approved this project. My study received approval from the University of New England Institutional Review Board March 4, 2014.

Please use the link below to complete the electronic survey and consent form by November 15, 2014. If you have any questions or concerns, please contact me at (304) 559-7034 or jrose9@une.edu. Your participation is greatly appreciated. Thank you for your time and effort.

Survey: <https://www.SurveyMonkey.com/s/OARRS>

Sincerely,

Julia Rose, MSPAS, Principal Investigator
PA-C at The Ohio State University Medical Center
Doctoral Candidate University of New England

APPENDIX C

CONSENT FORM

Title: Awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants.

Principle Investigator: Julia Rose

Advisor: Michelle Collay, Ph.D.

Department: Education

Address: University of New England

11 Hills Beach Road

Biddeford, Maine 04005

WRITTEN CONSENT TO ACT AS A RESEARCH SUBJECT

After reading the statement below, please indicate your consent by marking an X in the box on the consent in the survey.

Statement of Procedure:

This study is a research project conducted for completion of doctoral candidacy for the University of New England. The purpose of this study is to examine the awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants. Julia Rose, a physician assistant at Ohio State University Medical Center and Doctoral Candidate at the University of New England, is conducting the study.

For this study, participants will be asked to complete and return a survey consisting of twenty-six questions: age, gender, years in practice, primary setting, primary specialty, current enrollment in OARRS, number of OARRS reports requested in past month, frequency of OARRS access, reason for requesting OARRS report, medication denied from OARRS results, supervising physician notified based on OARRS results, importance of OARRS in prescribing decision, reason for enrolling in OARRS, reason for accessing OARRS, reason if not enrolled in OARRS, education about OARRS, knowledge of the OARRS, access to internet, specialty training, and state of graduate school.

All personal information will be kept confidential and voluntary. Participants who would like to obtain the results of this study may request them. If at any time during the study you need help, or have additional questions you can contact the investigator Julia Rose- jrose9@une.edu.

I certify that I have read and understand the statement of procedure and agree to participate as a subject in the research described above. My participation is given voluntary and without being influenced. I understand that I may discontinue at any time without penalty or prejudice. I certify that I am at least 18 years of age. Your anonymous consent will be obtained on the first page of the survey.

If you have questions about your rights as a research participant, please contact Olgun Guvench, M.D. Ph.D., Chair of the UNE Institutional Review Board for the Protection of Human Subjects at (207) 221-4171 or by email at irb@une.edu.

APPENDIX D

QUALIFICATION SURVEY

Physician assistants actively licensed to practice in the State of Ohio

Please answer the following questions to the best of your ability:

Section I: Questions Regarding the Ohio Automated Rx Reporting System (OARRS)

1. Are you currently enrolled in the Ohio Automated Rx Reporting System (OARRS)?
Yes No (please skip to section IV)
2. How many patients have you requested an OARRS report for in the past month?
0 1-5 6-10 10-20 >20
3. On average, how often do you access the OARRS database?
 For every controlled substance prescription
 Daily
 Weekly
 Monthly
 Rarely (less than once per month)
 Never

Section II: Impact of the OARRS on Daily Practice

4. Since the start of the OARRS in 2006, which of the following has most often led you to request an OARRS report?
Schedule II Schedule III Schedule IV Schedule V
5. Have you ever denied medication(s) to a patient based on information obtained from the OARRS report?
Yes No
6. Have you ever contacted a supervising physician based on your findings in an OARRS report?
Yes No
7. Does your supervising physician use OARRS?
Yes No Unsure

When dispensing a prescription for controlled substances, how important is the OARRS report in your decision process?

- Not important at all
- Somewhat not important
- Neither
- Somewhat important
- Very important

Section III: Factors Influencing Enrollment (Already Enrolled)

8. How important were the following in your decision to enroll in the OARRS (1=not important at all; 3=neither; 5 = very important)?
- ___ Education received about the OARRS (lectures, CE, printed materials, etc).
 - ___ Recommendation to enroll from a colleague and/or employer.
 - ___ Knowledge of the law surrounding the OARRS database.
 - ___ Usefulness at your practice site.
 - ___ Experience or situation at work using the OARRS.
 - ___ Being able to assist with decreasing drug diversion.
 - ___ Being able to assist with decreasing “doctor shopping.”
9. How important are the following in determining whether or not you access an OARRS report (1=not important at all; 3 = neither; 5 = very important,)? *Please skip to question 11 after completing your answer.*
- ___ Availability of internet access at the workplace.
 - ___ Knowledge of the law surrounding the OARRS database.
 - ___ Concern with having to confront a patient if there is any suspicion of doctor shopping or drug abuse.
 - ___ Prescribing behaviors of providers in your local area.
 - ___ Usefulness to your practice site.
 - ___ Time available at work to access an OARRS report.
 - ___ Previous interactions with a patient.

Section IV: Factors Influencing Enrollment in the OARRS (Not Enrolled)

10. How important are the following in your decision not to enroll in the OARRS (1 = not important at all, 5 = very important, 3 = neither)?
- ___ Awareness of the Ohio Automated Rx Reporting System (OARRS).
 - ___ Availability of internet access at work.
 - ___ Understanding of the law surrounding the OARRS database.
 - ___ Concern with confronting a patient regarding a prescription if there is any suspicion of doctor shopping and/or abuse.
 - ___ Usefulness to your practice site.
 - ___ Time available at work to access an OARRS report.
 - ___ Time available to enroll in the OARRS.

Section V: OARRS Education

11. What type of education have you received regarding the OARRS?

- None
- Lectures or education during college
- Continuing Education (CE) – live or printed
- Workplace education
- Supervising physician
- State Board of Medicine newsletter
- Article in a journal/magazine
- Other (please specify)_____

12. Which of the following types of education would you most likely participate in to learn more about the OARRS? Please check all that apply.

- Law Continuing Education (CE)
- Live General Continuing Education (CE)
- Workplace education
- Printed Continuing Education (CE)
- Mailed brochure
- State Board of Medicine newsletter
- Article in a journal/magazine

Section VI: Knowledge of the Ohio Automated Rx Reporting System (OARRS)

13. Which of the following medications are included in the OARRS database? Please check all that apply.

- Schedule II
- Schedule III
- Schedule IV
- Schedule V

14. Which of the following groups have access to an OARRS report? Please check all that apply.

- Pharmacists
- Physician Assistants
- Physicians
- Law enforcement
- Patients

15. Physician Assistants enrolled to receive an OARRS report cannot distribute a copy of the report to the physician or patient.

- | | |
|--------------------------|--------------------------|
| True | False |
| <input type="checkbox"/> | <input type="checkbox"/> |

Section VII: Practice/Education Information

16. What is your specialty? (select one)

- | | | |
|--|---|---|
| <input type="checkbox"/> Anesthesia | <input type="checkbox"/> Cardiology | <input type="checkbox"/> Emergency Medicine |
| <input type="checkbox"/> Family Medicine | <input type="checkbox"/> Infectious Disease | <input type="checkbox"/> Internal Medicine |
| <input type="checkbox"/> Neurology | <input type="checkbox"/> Orthopedics | <input type="checkbox"/> Pediatrics |
| <input type="checkbox"/> Physiatry | <input type="checkbox"/> Psychology | <input type="checkbox"/> General Surgery |
| <input type="checkbox"/> Obstetrics/Gynecology | | |
| <input type="checkbox"/> Other _____ | | |

17. What is your current primary practice setting? (select one)

- Ambulatory care clinic
- College or university
- Community (not for profit) hospital
- For-profit hospital
- Government agency
- Government hospital
- Home care organization
- Integrated health system
- Nursing home, skilled care, sub-acute or long-term care facility
- Primary care clinic
- University hospital
- Other, please specify _____

18. Do you have access to the internet at your primary site of practice?

- | | |
|--------------------------|--------------------------|
| Yes | No |
| <input type="checkbox"/> | <input type="checkbox"/> |

19. How many years have you been practicing as a physician assistant?

- | | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1-5 | 6-10 | 11-15 | 16-20 | 21-25 | 26-30 | >30 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

20. Have you completed any specialized training (e.g. residency, certificate programs, etc) in pain management?

- | | |
|--------------------------|--------------------------|
| Yes | No |
| <input type="checkbox"/> | <input type="checkbox"/> |

21. Do you practice in a setting where you assist with pain management on a daily basis?

- | | |
|--------------------------|--------------------------|
| Yes | No |
| <input type="checkbox"/> | <input type="checkbox"/> |

22. Did you graduate from a physician assistant school in the state of Ohio?

- | | |
|--------------------------|--------------------------|
| Yes | No |
| <input type="checkbox"/> | <input type="checkbox"/> |

Section VIII: Demographics

23. What is your age?

- | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| <30 | 30-39 | 40-49 | 50-59 | >59 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

24. What is your gender?

Male Female

25. Please leave any additional comments you have regarding the OARRS database.

If there are any questions please feel free to contact me at the following number:

Julia Rose
304-559-7034 (Cell)

Adopted from:

Ulbrich, T. R., Dula, C. A., Green, C. G., Porter, K., & Bennett, M. S. (2010). Factors influencing community pharmacists' enrollment in a state prescription monitoring program. *Journal of the American Pharmacists Association*, 50, 5.

APPENDIX E

PERMISSION TO USE SURVEY INSTRUMENT

From: Timothy R. Ulbrich [tulbrich@neomed.edu]
Sent: Monday, August 19, 2013 2:50 PM
To: Rose, Julia
Subject: RE: OARRS PDMP article
Attachments: Appendix 1 V2.doc

Hi Julia,

Thank you for reaching out to me. I'm glad to hear of your interest in this area. I would be happy to collaborate on the project with you if you feel that is appropriate and/or needed.

Either way, attached is the survey tool. I hope you find this helpful for your research!

Take care,

Tim Ulbrich

Timothy R. Ulbrich, Pharm.D.
Director of Pharmacy Resident Education
Assistant Professor of Pharmacy Practice
Northeast Ohio Medical University

tulbrich@neomed.edu
v 330.325.6124 f 330.325.5951

4209 St. Rt. 44, PO Box 95
Rootstown, Ohio 44272

From: Rose, Julia [mailto:Julia.Rose@osumc.edu]
Sent: Monday, August 19, 2013 12:38 PM
To: Timothy R. Ulbrich
Cc: Timothy Ulbrich (BlackBerry)
Subject: OARRS PDMP article

Dr. Ulbrich-

Hello. I am a PA at Ohio State University Medical Center and I am currently working on my Doctorate in Education. With all the recent changes in Ohio regarding schedule II medication privileges for PA's I found interest in your research "Factors influencing community pharmacists' enrollment in a state prescription monitoring program."

I am considering doing similar research for my dissertation. I tried to get a copy of your actual survey instrument on the japha website but was unsuccessful.

My initial ideas are to look at PA's/ NPP's use/knowledge of OARRS and focus on the surgical specialties. I don't want to repeat research that has already been done but wish to add to and compliment the work that you and your colleagues completed in 2008.

I would appreciate any information or suggestions that you or your colleagues can share.

9/17/2013

APPENDIX F

LETTER OF APPROVAL FROM INTERNAL REVIEW BOARD



Institutional Review Board
Olgun Guvench, Chair

Biddeford Campus
11 Hills Beach Road
Biddeford, ME 04005
(207)602-2244 T
(207)602-5905 F

Portland Campus
716 Stevens Avenue
Portland, ME 04103

To: Julia Rose
CC: Michelle Collay, Ph.D.
From: Lliam Harrison
Date: March 4, 2014

Project Title: Awareness and Utilization of the Ohlo Automated Rx Reposting System by Physician Assistants (IRB-20140228ROSEJ)

The Institutional Review Board (IRB) for the Protection of Human Subjects has reviewed the application materials you submitted in connection with the above captioned project, and has determined that the proposed work is exempt from IRB review and oversight as defined by 45 CFR 46.101(b)(2).

Please contact the IRB before any implementing any changes to the study or immediately upon learning of an adverse event or injury to any study participant.

Please contact Lliam Harrison at (207) 602-2244 or wharrison@une.edu with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Lliam Harrison", is written over a horizontal line.

Lliam Harrison, MA JD CIP CIM
Director of Research Integrity
IRB Administrator

IRB#: 20140228ROSEJ
Submission Date: February 27, 2014
Status: Exempt, 45 CFR 46.101(b)(2)
Status Date: March 4, 2014

APPENDIX G

EMAIL LETTER: OHIO BOARD OF MEDICINE

February 25, 2014

Dear Patrick Randall:

Thank you so much for your assistance on the phone this morning. My name is Julia Rose. I am a physician assistant at OSU medical center. I am also a doctoral candidate at the University of New England.

I propose to conduct a survey of physician assistants actively licensed to practice in the State of Ohio. The data collected will be based upon the awareness and utilization of the Ohio Automated Rx Reporting System by physician assistants. Physician assistants are being asked to complete a non-invasive twenty-six-question survey. Data will be beneficial to physician assistants within the state of Ohio, physician assistants in other states with prescription monitoring programs, as well as other medical providers in states with prescription drug monitoring programs.

I met with my major advisor previously to discuss this project.

I would appreciate your assistance with obtaining the list of active physician assistants in the State of Ohio and their contact information.

Number of active physician assistants in the State of Ohio: 2,563.

My mail address is 7782 Lerner Drive, Blacklick, OH 43004.

My email is julia.rose@osumc.edu or jrose9@une.edu

If you have any questions or concerns, please contact me at (304) 559-7034. Thank you so much for your time and effort.

Sincerely,

Julia Rose, MSPAS, Principal Investigator
PA-C at The Ohio State University Medical Center
Doctoral Candidate University of New England