

OPIOID PRESCRIBING IN THE EMERGENCY DEPARTMENT: PROVIDER  
KNOWLEDGE, ATTITUDE AND PRACTICE RELATED TO THE NEW JERSEY STATE  
STATUTE

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By

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ABSTRACT

In response to the national opioid crisis, many states have implemented opioid prescribing statutes in the past year. Research regarding the impact of these statutes on the opioid prescribing practices of providers in an ED setting is limited. Published findings reveal varying patterns of opioid prescribing among ED practitioners and indicate decreases in opioid prescribing when prescribing guidelines are implemented. Currently, no studies delineate a causal relationship. This research describes the effects of an educational intervention related to the 2017 New Jersey state-mandated statute on opioid prescribing practices of providers in a community hospital emergency department (ED). The purpose of the intervention is to provide education on the most current state statutes on opioid prescribing while informing ED providers on appropriate management of acute pain in order to adhere to state regulations, thereby engage in safe opioid prescribing practices.

The research design was quasi-experimental, comprising a pre-post and follow-up assessment of an educational intervention, focusing on self-reported provider knowledge, attitudes and practice (KAP) related to opioid prescribing practices. The pre-post and follow-up data collection instruments were based on both evidence (e.g., related to

knowledge of opioid addiction and the new state law) and the research questions. A targeted sample of fourteen providers who currently prescribe opioids in a community hospital ED participated in the intervention and completed the surveys. The intervention included a self-directed 10-15 minute educational PowerPoint reflecting the most current evidence based practice (EBP). The PowerPoint was developed using the most current New Jersey State Statute on opioid prescribing, guidelines from the American Academy of Emergency Medicine (AAEM) and recommendations from the Ernest Mario Rutgers School of Pharmacy.

Descriptive analysis was used for the quantitative data. Thematic analysis was used for qualitative data, identifying categories based on responses to the open-ended questions, and themes across the questions.

All participants acknowledged that there was an opioid addiction problem in NJ. The majority (86%) had received communication about the statute prior to this intervention. The majority (57%) reported the key requirements of the NJ opioid prescribing statute. On follow-up (7 or 70 %) participants reported both seeking continuing education and implementing opioid guidelines. 64% reported that the statute influenced their prescribing patterns and 90% agreed that the educational intervention influenced their opioid prescribing practice.

As the opioid epidemic continues to escalate, education on the most current prescribing laws and evidence-based practice is a vital component of policies to address this urgent public health problem. ED providers report that the state statute regulation,

and education related to it and to EBPs influence their prescribing opioids, helping to ensure adherence to the regulations and contributing to reduction of opioid addiction.

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## **Chapter 1–Introduction**

The Centers for Disease Control and Prevention (CDC, 2018) has reported that opioid prescription-related deaths have quadrupled in the United States (U.S.) since 1999. The National Institute on Drug Abuse (NIDA, 2014) reports that 26.4 million to 36 million people abuse opioids worldwide. Nationally, it is estimated that opioids attribute to 115 deaths daily with half involving opioid prescriptions (CDC, 2018). In 2016, more than 65,000 drug-overdose deaths occurred in the US, a 21% increase in one year (National Academy of Medicine, 2017). Nationally, there has been a 99.4% increase in emergency department (ED) visits related to opioid use (Weiss et al., 2017). Approximately 21-29% of those for whom opioids are prescribed misuse the prescribed drugs, with 4-6% transitioning to heroin use (NIDA, 2018).

In 2016, the state of New Jersey (NJ) recorded 69,477 hospital admissions related to substance abuse, 40% of which were due to heroin and other opioids. Ocean County, NJ experienced 253 suspected opioid related deaths in 2016, which is approximately one death every 48 hours (NJ Cares, 2018). In 2016, the CDC released evidence-based guidelines for opioid prescribing practices. The guidelines urge Licensed Independent Practitioners (LIP) defined by Health Resources and Services Administration (HRSA, 2018) as: Physicians, Veterinarians, Dentists, Nurse Practitioners (NP) and Physician Assistants (PA), to implement clinical practice guidelines when prescribing opioids. The term LIP is used interchangeably with ED provider throughout this scholarly project. The overall aim of the guidelines provides evidence-based recommendations to improve LIP opioid prescribing practices while reducing the incidences of addiction and overdose (CDC, 2018).

## **Statement of the Problem**

Current literature suggests that varying patterns of opioid prescribing among LIPs in an ED creates ambiguity and that these practices contribute to the current opioid epidemic (Smulowitz, Cary, Boyle, Novack, & Jagminas, 2016). Both the volume and the frequency of opioid prescribing are important factors in the overall supply of opioids that enter into the community. The LIPs in ED settings contribute to the opioid crisis by issuing frequent opioid prescriptions with low-pill count (Smulowitz, Cary, Boyle, Novack, & Jagminas, 2016). Fox and Li (2013) demonstrated the effectiveness of implementing opioid prescribing guidelines for ED dental-pain patients, reducing rates of opioid prescribing by 17%. This result supports the need for a collaborative, uniform approach to opioid prescribing in the ED.

In response to the current opioid crisis, on January 17, 2017, former NJ Governor Christie created a statewide drug task force by signing Executive order 219 declaring an opioid crisis in NJ (Jan & Wiggall, 2018). On May 15, 2017 a statewide government intervention that targeted opioid prescribing patterns was implemented (Jan & Wiggall, 2018). It was one of the strictest state laws regarding prescribing practices. The law, Senate and General Assembly of the State of New Jersey: C.24: 21-15.2. Law C.24: 21-15.2 law stipulates that an initial opioid prescription issued by a LIP for acute pain, the quantity shall not exceed a five-day supply (New Jersey Legislature, 2017). This law, which applies to all ED providers statewide, raised the question: For emergency department providers, what effect will mandated state statutes have on opioid prescribing practices?

## **Background of the Problem**

In the context of an opioid crisis, LIPs are well positioned to collaborate with policymakers, hospitals and community partners in diminishing the crisis of addiction and overdosing (National Academy of Medicine [NAM], 2017). The significant varying patterns of opioid prescribing practices in EDs, and the effect of these patterns on public health, requires significant attention in order to ensure that patients' needs are balanced against the risk of long-term addiction (McDonald, Carlson, and Izrael, 2012).

When considering the opioid crisis through a community lens, the overall impact of the epidemic imposes a burden not only on healthcare services but extends broadly to all communities nationwide. It is estimated that nationally, opioid prescription abuse costs \$78.5 billion (CDC, 2018). This staggering price tag includes healthcare costs, substance-abuse treatment, the intercession of the criminal justice system, and the loss of labor productivity, with a combined total that creates a fiscal toll for the nation (CDC, 2018).

With a reported 154% increase in opioid prescriptions from 1992 to 2003, the National All Schedules Prescription Electronic Act was signed into law nationally, on August 11, 2005; however due to lack of funding, full implementation did not take place until 2013 (National All Schedules Prescription Reporting Act, 2005). This act was intended to ensure that healthcare providers monitor and decrease misuse, abuse and diversion of opioid prescriptions (National All Schedules Prescription Reporting Act, 2005).

In 2009, the Food and Drug Administration (FDA) began to address opioid risk, misuse and abuse by partnering with SAMHSA to launch a "Safe Use Initiative" highlighting the risks of opioid medications for LIPs, pharmaceuticals and the general

public (FDA, 2017). This collaborative effort focused on identifying risks associated with opioid prescribing, while supporting engagement between Federal agencies and healthcare systems in local communities to implement and evaluate LIP safe opioid prescribing practices (FDA, 2017). Concurrently, the FDA collaborated with the U.S. Department of Justice Drug Enforcement Administration Diversion Control Division (DEA) to educate the public on safe disposal of opioids to further prevent unnecessary opioids from entering our communities (FDA, 2017).

In 2012, the FDA implemented the Extended Release (ER)/Long Acting (LA) Opioid Risk Evaluation and Mitigation Strategy (REMS). This risk management strategy provides unlimited funding to pharmaceutical companies for the development of LIP accredited continuing education, patient education, medication guides along with risk assessment instruments and patient-prescriber agreements to ensure prescribing opioids benefits outweigh the risks of prescription misuse, abuse and addiction, overdose and death (FDA, 2017). In the same year, the American College of Emergency Physicians (ACEP) collaborated with the CDC and FDA to develop opioid prescribing guidelines that addressed acute pain, chronic pain and low back pain and to detail appropriate prescribing patterns when initiating opioids within an ED setting (FDA, 2017).

In 2013, the FDA continued their efforts to address the opioid crisis by issuing an open letter urging LIPs to obtain FDA approved training in opioid therapy (FDA, 2017). Also, in 2013, in response to the overdose deaths worldwide, the World Health Organization (WHO), together with the American Academy of Emergency Physicians (AAEP), issued recommendations to combat opioid overdose. The recommendations urged increased access and training for LIPs with regard to the use of naloxone, an opioid

antagonist used in emergent situation to resuscitate overdose victims (WHO, 2013). During the same year, the American Academy of Emergency Medicine (AAEM), acknowledging that ED providers are faced with 50% of their patients having a chief complaint of pain, issued recommendations for opioid prescribing in patients presenting to EDs with such complaints (AAEM, 2017).

In 2015, the FDA finalized guidelines for pharmaceutical companies that produced synthetic opioids promoting abuse deterrent properties within opioid pills to prevent abuse by inhibiting chewing, crushing and snorting (FDA, 2017). To further combat opioid overdose and death, the FDA approved an intranasal route for naloxone providing a quicker response during emergencies.

In 2016, 47 of the 50 U.S. governors met to develop a coordinated response to the opioid epidemic. The result is known as *A Compact to Fight Opioid Addiction*, a response to lead change in reducing inappropriate opioid prescribing, to understanding opioid addiction and to create policy that reduces barriers to addiction recovery services within each individual state (National Governors Association, 2016). Despite all the effort to reduce opioid misuse, abuse and addiction, overdose deaths continue to escalate.

In response to the *Compact to Fight Opioid Addiction*, NJ, and to the expanding epidemic in NJ, Governor Christie instituted state mandated opioid prescribing legislation (May 15, 2017), one of the most restrictive in the country for prescribing opioids (New Jersey Legislature, 2017). This legislation affected all LIPs who prescribe opioids statewide.

## **Organizational Needs Assessment**

This Doctor of Nursing Practice (DNP) project focuses on a single 42-bed community-based ED located in NJ. Prior to the recent government intervention, LIPs who prescribe opioids in NJ were required to have a DEA license, Controlled Dangerous Substance (CDS) license and to complete a one-time opioid prescribing course. Additionally, NPs require a written collaborative agreement between a designated physician and the NP. Actively prescribing LIPs are also required to use the Prescription Drug Monitoring Program (PDMP) before issuing any opioid prescription.

As of May 15, 2017, when NJ's regulation on opioid prescribing was enacted, this researcher carried out an organizational assessment of this ED in the facility, using Schein's Level of Organizational Culture to determine its readiness to implement state regulated opioid prescribing practice change. Schein uses three levels of organizational culture including artifacts, espoused beliefs, and underlying assumptions, to determine readiness for change (Schein, 2017). Understanding the dynamics of these cultural aspects of an organization creates a foundation for the successful implementation of a quality improvement change (Schein, 2017). The results of the assessment are presented by cultural domain.

### **Artifacts**

Scheins' (2017) cultural theory of artifacts is one of the defining features that discern organizational culture found in architecture and physical environment. Physically, the ED is spherical, with the nucleus containing the ED providers, conveying the message that the atmosphere is provider driven. The nucleus is filled with books, educational posters, and computers, followed by the next semi-circular layer occupied by nurses, technicians

and secretaries supplied with the necessary equipment (including phones, printers and fax), and finally an outer layer with patient rooms. The ED department has up-to-date applications to assist LIPs with the necessary tools to achieve optimal clinical outcomes. By utilizing the available technology, these LIPs are able to stay current with the most up to date evidence based practice (EBP), such as but not limited to, opioid prescribing guidelines.

### **Espoused Beliefs and Values**

Espoused beliefs and values are the philosophies, goals or strategies that ultimately create the culture accepted and that functioned within an organization (Schein, 2017). Providers participate in monthly meetings that include case review for quality improvement; at that time the most up-to-date EBP guidelines are reviewed. Exhibiting best practice behavior as a norm directly correlates with these ED providers espoused beliefs of commitment to EBP and patient centeredness. Monthly review of EBP, together with the availability of state of the art technology, demonstrates a philosophy built on EBP, highlighting readiness for change when implementing state regulations on opioid prescribing into its culture.

### **Basic Underlying Assumptions**

Basic assumptions are defined by group values. The same values determine how the group perceives and responds to the accepted culture that emerges from the philosophy of their espoused beliefs (Schein, 2017). The basic assumptions of this group are grounded in communication. The monthly meetings are a forum through which all of the ED providers can openly communicate, providing an atmosphere for both teaching and learning. In this ED providers' communication ranges from closed-looped, which takes

place during emergent situations to collegial open discussions. Discussions are focused on EBP. This behavior meets the EDs' vision of "the best healthcare system, with values built on education, honesty, integrity, respect, compassion, balance and diversity while providing the best healthcare experience" (Southern Ocean Medical Center, n.d.).

### **Research Question**

The use of the PICO research question format, also known as PICOT, is the framework that develops a phenomenon of interest, comprising the formulation of a question that is based on the most relevant information captured in a review of the literature (Melnyk & Fineout-Overholt, 2015). The PICO format includes patient population (P), intervention or issue of interest (I), comparison (C) intervention and outcome (O). The PICO question for this DNP project is: For ED providers, what effect will mandated state statutes have on opioid prescribing practices?

The PICO framework created for this DNP project includes: The population (P) is a convenience sample of ED providers, comprising 19 ED LIPs who are contracted to work at SOMC. This ED provider sample consists of five NPs, who are masters prepared with a specialty as Family Nurse Practitioners (FNP) and 14 physicians of whom nine are board- certified emergency medicine physicians and five are pediatricians. The intervention (I) will assess the impact of the NJ state-mandated statute on opioid prescribing practices by LIPs in a community based ED. The comparison (C) will address three research questions, which are:

1. What effect will state mandated statutes have on the knowledge of participating ED providers regarding current state statutes related to prescribing opioids? This will measure the impact of ED provider knowledge regarding an educational

- intervention related to the state-mandate and self-reported impact on opioid prescribing.
2. What effect will state mandated statutes have on the attitudes of participating ED providers related to opioid addiction and the current state statutes related to prescribing opioids? This will measure the impact of ED providers attitude regarding an educational intervention related to the state-mandate and self-reported impact on opioid prescribing.
  3. What effect will state mandated statutes have on the practices of participating ED providers regarding current state statutes related to prescribing opioids? This will measure the impact of ED provider practice regarding an educational intervention related to the state-mandate and self-reported impact on opioid prescribing.

### **Theoretical Framework**

A theoretical framework is a map that provides insight for examining outcomes being measured, which will clarify and give direction to this DNP project, while providing deeper insight to the research (Moran, 2017). The theoretical framework for this scholarly project is the PRECEDE-PROCEED model (Gren & Kreuter, 1991). The PRECEDE-PROCEED model is divided into eight domains or phases. PRECEDE is an acronym for “predisposing, reinforcing, and enabling constructs in education and environmental diagnosis and evaluation” (Gren & Kreuter, 1991, p.1). PROCEED is an acronym that describes the intervention itself, including “policy, regulatory, and organizational constructs and educational and environmental development” (Gren & Kreuter, 1991, p.1).

The PRECEDE-PROCEED framework is a public health-based model that examines a community’s overall health, while focusing on the political, epidemiological, behavioral,

environmental, educational, social, and economical factors that influence the community as a whole (Gren & Kreuter, 1991). This scholarly project focused on evaluating the educational aspects of the framework, specifically on the impact of state-regulation with regard predisposing factors of ED provider self- perceived knowledge, attitude and practice (KAP). The PRECEDE-PROCEED model provides the framework for interventions that require collaborative efforts among healthcare organizations and policymakers, which impact the community at large and promotes a multidimensional approach to problems that are multifactorial and creates direction and focus that sustains changes in health promotion such as opioid misuse, abuse and addiction (Gren & Kreuter, 1991).

PRECEDE begins by determining the desired outcome for the community. As it relates to this scholarly project, when examining the correlation of government intervention and its effects on opioid prescribing in the ED, the overall desired effect is to reduce the amount of opioid prescriptions being introduced into the community (Gren & Kreuter, 1991). This approach specifically targets LIPs in the ED who engage in opioid prescribing that directly affects opioid misuse, abuse and death within the community.

The PROCEED framework allows for implementation and evaluation of the policy providing a period of discovery that supports a specific populations health needs (Gren & Kreuter, 1991). Simultaneously, the framework allows constant evaluation of the process creating change through assessment, implementation and evaluation.

### **Phase 1**

Phase 1 defines the ultimate outcome: it identifies a social problem with a targeted population (Gren & Kreuter, 1991). This project aims to identify the effects of state

mandated statutes on opioid prescribing based on the KAP of LIPs practicing in an ED. This evaluation targets the impact that LIPs in the ED have on opioid prescribing and its contribution to the national opioid epidemic.

## **Phase 2**

Phase 2 identifies the specific issues that contribute to the overall problem a community or specific population may be challenged with (Gren & Kreuter, 1991). This phase of the scholarly project examined the role that opioid prescribing in the ED contributes to the overall epidemic plaguing our nation. This was a measure of ED provider KAP when prescribing opioids, while maintaining adherence to the state statute.

## **Phase 3**

The third phase examined the factors that influence lifestyle-behavior responses to the environment, those internal and external factors that influence the needed changes in the identified phenomenon of interest (Gren & Kreuter, 1991). Published findings reveal varying patterns of opioid prescribing among ED providers and indicate decreases in opioid prescribing when prescribing guidelines are implemented. During this phase of the project, ED providers' KAP was assessed using self-reported surveys in order to identify any barriers to opioid prescribing as it relates to the NJ prescribing statute. Using this method identified the likelihood that ED providers will adopt the current NJ Opioid Prescribing Statute and implement it into clinical practice.

## **Phase 4**

The fourth phase identifies best practices and other sources of guidance for intervention design, including initiative, regulation, and policy issues that might influence the implementation of the intervention (Gren & Kreuter, 1991). During this phase,

internal and external policies/regulations that might affect the intervention are evaluated. Internally, the ED providers the NJ state statute C.24: 21-15.2. Law C.24: 21-15.2 law was adopted for best practice will be evaluated. Externally, NJ integrated the PMDP as part of the law, involving DEA surveillance. On a national level, government agencies such as the FDA and DEA along with professional organizations that include ACEP, AAEM and the American Nurses Association (ANA) have adopted similar opioid prescribing guidelines to counter the opioid epidemic.

### **Phase 5**

This phase evaluates the impact of current practice on newly created policies and the overall effect they have on the health of the community (Gren & Kreuter, 1991). Specifically, this scholarly project evaluates the KAP of ED providers when implementing state-mandated opioid prescribing regulation, which affects provider-prescribing patterns across the state. The intervention used a self-directed 10-15 minute educational PowerPoint on the NJ Opioid Prescribing Law accessed online through Survey Monkey©. This intervention provided education on the most current NJ state statutes on opioid prescribing and to inform ED providers on appropriate management of acute pain in order to adhere to state regulations and thereby engage in safe opioid practices.

### **Phase 6**

The sixth phase is an evaluation of the implementation process, assessing for effectiveness (Gren & Kreuter, 1991). This scholarly project used pre- and post- self-reported KAP surveys measuring providers in a community based ED. The self-reported surveys were comprised of a three-step process: Time 1 (T1), a pre-educational survey

prior to the educational intervention; Time 2 (T2), a survey taken immediately after the self-directed educational PPT intervention; and Time 3 (T3), a one month follow up survey to measure ED provider impact and sustainability of the educational intervention.

### **Phase 7**

Phase 7 evaluates the impact of the intervention; to determine if the desired effect was achieved (Gren & Kreuter, 1991). The process was to evaluate the implementation of opioid prescribing mandated state statutes and identify if the process changes contributes to increased opioid prescribing stewardship within the designated ED (Gren & Kreuter, 1991). This project evaluated pre- and post- self-reported KAP surveys of providers who prescribe opioids in this ED. Surveys with both closed and open-ended survey were used to assess self-perceived KAP regarding opioid prescribing and the government mandate placed on prescribers in New Jersey. Descriptive analysis was used to determine both the demographic and knowledge portions of the self-reported survey to assess for any differences in ED provider KAP. Analyze of one-month follow up self- reported surveys measuring the educational sustainability of the educational intervention. Open-ended qualitative questions were cross-tabulated using thematic analysis to identify categories based on responses, and themes across questions.

### **Phase 8**

Phase 8 evaluated the outcome of the intervention by measuring: 1) the desired effect, and 2) if the intervention of applying state-mandated regulations on opioid prescribing changed the prescribing patterns of LIP's in the ED. In this phase of evaluation, gaps were identified, as well as the need for assessment or implementation of further education and training.

## **Definition of Terms**

### **Licensed Independent Practitioners**

LIPs are registered or certified individuals allowed by law to independently provide patient medical services within the scope of their practice, which includes prescriptive privileges (HRSA, 2013).

### **Opioid**

Opioids are a class of drugs known as opioid antagonist, designed to decrease painful stimuli by interfering with opioid receptors in the spinal cord, brainstem, thalamus, limbic system and reticular activating system (Edmunds & Mayhew, 2009).

Providers who are licensed to prescribe opioids obtain opioid prescriptions legally. The most common types of synthetic opioids prescribed include oxycodone, hydrocodone, codeine, morphine, and tramadol (Edmunds & Mayhew, 2009).

### **Prescription**

An instruction written by a LIP that authorizes a patient to be provided a medicine or treatment.

### **Prescriber**

A LIP who is licensed to write an order for a prescription drug. Each state law designates who has the authority to write prescriptions (Edmunds & Mayhew, 2009). In the state of New Jersey, prescriptive authority is allowed after formal education and national certification are completed, all prescribers must have a current license to practice, engage in the active practice of the profession, has not committed an act that would constitute grounds for the denial, suspension or revocation of the license and satisfies any continuing education requirements. Specifically for opioid prescribing, a

one-time five-hour opioid prescribing course is required. Upon fulfilling these requirements each prescriber obtain a DEA license for a federal number to be used on all prescriptions for controlled substances (Edmunds & Mayhew, 2009). After meeting all requirements and receiving a license from the DEA, a prescriber may issue prescriptions. In the state of New Jersey prescribers include Physicians, Veterinarians, Dentists, Nurse Practitioners (with a collaborating physician) and Physician's Assistants supervised by a physician.

### **Schedule II Controlled Substance**

The Drug Enforcement Administration (DEA) divides prescription drugs into five schedules based on their likelihood of causing addiction when used inappropriately according to the Controlled Substance Act. Schedule II Controlled Substances have a strong indication for both physical and psychological dependence. Schedule II Controlled Substances (opioids) include: hydromorphone , methadone , meperidine , oxycodone, fentanyl, morphine, opium, codeine, and hydrocodone (DEA, 2018).

State Mandated Regulations- Government intervention at the state level to implement policy and produce desired outcomes (Getzen, 2013). The regulations are designed to both protect and improve the health and safety of society (Getzen, 2013).

### **Conclusion**

Chapter one introduced the significance of our nation's opioid crisis and the call for front-line clinician leadership to counter the opioid epidemic (NAM, 2017). As primary “gatekeepers” of opioid prescribing, LIPs are well positioned to advance this campaign when prescribing opioids within an ED setting. This scholarly project measures the

effects of an educational intervention related to the 2017 NJ state-mandated statute on opioid prescribing practices of providers in a community hospital ED. Overall, the scholarly project addresses clinical practice that affects patient outcomes by decreasing opioid misuse, abuse and death that is directly affected by targeting opioid prescribing stewardship.

## **Chapter 2–Review of the Literature**

### **Introduction to Research Criteria**

In response to the national opioid crisis, many states have implemented opioid prescribing statutes in the past year. Research regarding the impact of these statutes on the opioid prescribing practices of providers in an ED setting is sparse. Published findings reveal varying patterns of opioid prescribing among ED practitioners and indicate decreases in opioid prescribing when prescribing guidelines are implemented. Currently, no studies delineate a causal relationship.

In 2017, this researcher reviewed the literature using the databases PubMed, Ovid, and PsycINFO, carried out for this doctoral study; this was updated in 2018. The following PubMed, Ovid, and PsycINFO Using the Medical Subject Headings (MeSH) terms narcotics, emergency room, guidelines, policy and prescribing the search yield a total of 188 studies. Only peer-reviewed studies from scholarly journals were screened using titles and abstracts related to the key search terms. Only studies in English that were published between 2012 and 2018 with abstracts that met the inclusion criteria were reviewed. Inclusion criteria included scholarly peer-reviewed journals that reported studies (conducted in the ED) related to opioid, narcotic, prescribing, and legislation/policies. Exclusion criteria included countries other than the US, more than one

classification of medications other than opioids, and studies that focused on how prescribing guidelines were developed. After applying the inclusion/exclusion criteria 23 studies were retained. The evidence was then appraised to ensure review of high-quality literature; it was selected using a rigorous systematic approach and specifically the Let Evidence Guide Every New Decision (LEGEND), which served as the framework for identifying and classifying the selected articles. Following appraisal, nine studies yielded a high and/or a moderate level of evidence with heterogeneity in population and intervention that were retained.

Specifically, the OVID database cited 21 articles, five of which were relevant by title and abstract; after using the appraisal tool, three were retained. The database PubMed cited 91 articles -- with the inclusion of publication within the past five years, 89 studies were found most relevant. Using the inclusion/exclusion criteria for relevance, 16 articles were then appraised yielding 7 relevant studies. A search of the PsycINFO database yielded 76 studies, including peer-reviewed scholarly journals published within the past five years; after evaluation, two studies were retained with one remaining after appraisal. The final results of the review discussed include nine primary research articles--eight quantitative and one qualitative, with one secondary systematic review.

Additionally, publications from Rutgers Ernest Mario School of Pharmacy, and professional organizations such as AAEM were incorporated when developing the educational program based on the NJ state statute and opioid prescribing requirements for the LIPs in the ED. These publications are the most up-to-date recommendations for opioid prescribing within the state of NJ.

## **Critique and Synthesis of Previous Evidence**

The current literature for opioid prescribing in the ED is comprised mainly of retrospective studies such as Del Portal et al., (2016), Fox & Li (2013), Ganem et al, (2015), Osborn et al. (2016) and Smulowitz et al. (2016). All focused on implementing guidelines for opioid prescribing in the ED. The systematic review by Jordan, Blackburn, DesJarlais, & Hagan (2017) focused on the prevalence of opioid abuse, while Lee, Choi, & Pransky, (2015) investigated the long term effects of opioids used as first-line treatment and addiction in the ED. In an attempt to understand LIP prescribing habits, McDonald, et al. (2012), investigated geographical differences in opioid prescribing. Surratt et al, (2014), demonstrated a decrease in opioid distribution at the state level once mandates on pain management clinics were implemented in Florida. While, Harocopos et al., (2015) used a qualitative approach examining the role prescriptions opioids had in the initiation of heroin use.

Collectively, the evidence demonstrates that when restrictions on opioid distribution are implemented at both a departmental and state level there is a decline in opioid distribution. All the investigations measured the effects of opioid prescribing by LIPs using multifactorial variables. Del Portal et al., (2016), Ganem et al., (2015), Osborn et al., (2016) and Smulowitz et al., (2016) examined the effects of implementing guidelines at the ED Departmental level. Fox & Li (2013) and Ganem & Varney (2015) both used the most common diagnosis of dental pain or chronic pain to implement and evaluate their guidelines. While, Del Portal et al., (2016) and Osborn et al. (2016) compared ED provider prescribing pre-and post- implementation of department opioid prescribing guidelines. Smulowitz et al., (2016) investigated ED provider patterns without

prescribing guidelines in an attempt to identify variation in prescribing patterns among the various LIPs in the ED. McDonald et al., (2012) in a large-scale investigation used 135 million opioid prescription records from retail pharmacies across the nation to demonstrate variations in opioid prescribing while hypothesizing that LIPs establish their own prescribing patterns based on their personal KAP. Jordan, Blackburn, DesJarlais, & Hagan (2017) continued to support the effects of opioid prescription misuse. This systematic review supported the literature demonstrated an increased prevalence of opioid prescription misuse among 11-30 year olds. Harocopos et al., (2015) continued to identify the role opioid prescription use can lead to addiction and heroin use, this study focused on participants in a drug treatment programs.

Findings from both Harocopos et al (2015) and Jordan, Blackburn, DesJarlais, & Hagan (2017) support the evidence that the opioid epidemic continues to escalate and opioid prescriptions have a role in bridging individuals to heroin use abuse and death. Del Portal et al., (2016), Ganem et al., (2015), Osborn et al., (2016) and Smulowitz et al., (2016) acknowledge that implementing opioid prescribing guidelines in the ED have a positive effect, but were unable to capture the ED provider's individual contribution in opioid prescribing. While Suratt et al., (2014) highlighted the effects of state legislation in pain management clinics, however, this legislation did not capture all LIPs that prescribed opioids. In reviewing the literature considering the multifactorial problem of opioid abuse the literature was sparse in capturing the KAP of ED providers when prescribing opioids as suggested by McDonald et al., (2012). Notably, there was also a gap in capturing the effects of state legislation that directly targets LIP opioid prescribing practice specifically, ED providers.

The following is a detailed appraisal of the literature was used to support this scholarly project:

Del Portal et al, (2016), investigated the impact of guidelines on opioid prescribing patterns in an urban ED that averaged 75,000 visits. The study was a retrospective observational cohort study. Data collection included a chart review over a two-year period. The authors reviewed 13,178 charts that included 31 LIP's in the ED. The investigation reports an 18.9% decrease in opioid prescribing. This decrease was sustained over 18 months after implementing the guidelines.

Fox & Li (2013) evaluated the effects of implementing of a performance-improvement program that implemented opioid prescribing guidelines for treating ED dental-pain patients. This was a retrospective cohort study that included chart review over a 19-month period. The sample size was 16 emergency room physicians in two rural community hospitals. The research findings concluded that opioid prescribing rates were reduced by 17%, which supports the effectiveness of a collaborative, uniform approach to opioid prescribing in the ED (Fox & Li, 2013).

Ganem et al., (2015), evaluated opioid prescribing patterns in the ED they focused on complaints and diagnosis related to chronic pain. This was a retrospective descriptive cohort study of 1322 charts, 433 of which included the issuance of opioid prescriptions; it was conducted over a three-year period. The study concluded that patients in the ED with a discharge diagnosis of chronic pain are 33% more likely to be issued an opioid prescription in conjunction with varying prescribing patterns among the LIP's. It also reported that active duty physicians prescribed 8% of the opioid prescriptions while physician assistants prescribed 23% of the opioid prescriptions.

Osborn et al. (2016) examined the effectiveness of implementing opioid prescribing policies in an ED. A prospective/ retrospective cohort study using chart review over a 7-year period evaluated 34 ED LIPs from a non-university teaching hospital. Data analysis was a pre- post- intervention comparison using descriptive statistics, t-test and X2-test. This investigation concluded that after implementing opioid prescribing guidelines in the ED there was 39.6% overall declines in opioid prescribing, with an absolute decrease in prescribing of 10.2%.

Smulowitz et al. (2016) evaluated opioid prescribing patterns of LIPs in the ED. This evaluation was a retrospective cohort study that included a chart review of 21 LIPs that 127/1000 opioid prescriptions were prescribed, 12% of the time patients were discharged with an opioid prescription over 8 months. Results concluded that ED providers issue frequent opioid prescriptions with low pill-count.

Jordan, Blackburn, DesJarlais, & Hagan (2017) performed a systematic review of the current literature evaluating the prevalence of prescription opioid misuse among individuals ages 11-30. Results yield 19 investigations that demonstrated the prevalence of prescription opioid misuse among individuals 11- to 30-years of age. The review highlighted that the trend of misuse has increased 40% since 2002.

The negative effects of initiating opioid medications in the ED were demonstrated by Lee, Choi, & Pransky, (2015), who investigated the effects of opioids used as the first-line treatment for pain initiated in the ED. This was a retrospective cohort study that comprised a 2-year chart review with a sample size of 2,887. This study concluded that occupational low-back pain contributed to increased long-term opioid use coupled with

increased medical costs by 12%. This large sample with longitudinal data related to in patient outcomes when initiating opioid therapy in the ED, leading to long-term use.

McDonald., et al. (2012), investigated geographical differences in opioid prescribing across the US, with a particular focus on the correlation of socio-economic factors that contributed to LIP prescribing patterns. This investigation was a retrospective cohort study that measured 135 million opioid prescriptions dispensed from 37,000 retail pharmacies, written by 907,782 prescribers in the U.S. The study results demonstrated a substantial variation in LIP opioid-prescribing patterns; however, no correlation was found that indicated a socio-economic factor that influenced prescribing. This study was critical in demonstrating the need for continued research into LIPs prescribing practices that “strike the right balance between the benefits and risks of opioids”, (McDonald et al., 2012).

Surratt et al., (2014), evaluated the effects of opioid diversion after the implementation of state legislation in Florida that required pain management clinics to be registered with the state and not allowed to dispense opioid pills without being registered. Using systematic longitudinal data collection, reports were obtained from local police departments, sheriff departments, state agencies, and drug task-force quarterly reports. The reports were examined from 2010 to 2011, and after the implementation of state legislation. The intervention targeted pain management clinics, while using a statewide PDMP. The study concluded there was a significant decline in mortality rates related to opioids drugs with government intervention. This investigation supports the need for uniform guidelines regulating opioid prescribing patterns. This investigation

demonstrated how state legislation with a multi-disciplinary approach could reduce the incidence of opioid misuse, abuse and death.

Harocopos et al., (2015) examined the situational and social context of heroin initiation among a subset of cohorts that misused opioid pills. This was a qualitative study using a thematic qualitative method. The sample comprised 31 purposively selected participants recruited at a community-based outpatient treatment program in New York City. Data collection comprised in-person interviews that were audio recorded. The study demonstrated that the transition from opioid pills to heroin use varies with no distinct pattern. However, all participants' reported physical dependence to opioid pills prior to heroin initiation. This investigation focused on the effects of aberrant opioid prescribing and the need to bridge the gap that leads to opioid addiction, while demonstrating that heroin abuse begins with opioid prescription pill addiction.

### **Rationale for Project**

The literature review and appraisal demonstrates the need for legislation/policies in opioid prescribing for LIPs in the ED. Strong indisputable evidence demonstrates that ED LIPs have varying patterns of opioid prescribing (Smulowitz et al, 2016). However, when prescribing guidelines are implemented there is a reduction in opioid prescriptions (Del Portal et al., 2016; Fox & Li, 2013; Ganem et al., 2015; Osborn et al., 2016 and Smulowitz et al., 2016). All the aforementioned investigations collectively contribute to the evidentiary need for further research on opioid prescribing. There is no evidence to suggest the effects state mandated statutes have on the KAP of participating LIPs in the ED regarding current state statutes related to prescribing opioids. This overall body of

evidence also lacked data regarding the factors that influence or drive LIPs when prescribing opioids in the ED setting.

Collectively, since 2009, the FDA, the CDC, together with prominent professional organizations in the medical field, have attempted to reduce opioid prescribing by creating guidelines and implementing PDMP's nationally, while the incidences of opioid addiction, overdose, and deaths continue to rise. Exploring the effects of a state mandate and how it affects opioid prescribing the ED will contribute to future ED provider education, information dissemination of opioid prescribing policy. This study will assist policymakers, providers, systems, hospitals, and EDs in identifying barriers to opioid prescribing in an ED setting to shape how future policy, provider education and the dissemination of information should occur.

### **Conclusion**

This chapter included the body of evidence synthesized from a rigorous review of the literature related to what effect LIPs in the ED have on opioid prescribing as it relates to guidelines and its overall contribution to the current opioid epidemic. The LEGEND taxonomy was the framework to appraise and classifying the evidence for its strength of recommendation when applied to clinical practice. Based on the critique of literature examined a moderate to high level of evidence that was consistent with the overall conclusion supports the hypothesis that ED providers have varying patterns of opioid prescribing. The aim of this research is supported by the lack of evidence that determines the impact state-mandated regulations have on LIPs in the ED when prescribing opioids.

## **Chapter 3–Methods**

### **Design and Implementation Plan**

Chapter three includes the method and design that was used to implement this investigation, including a description of the pre-post and follow up surveys the participants completed and the opioid prescribing educational PowerPoint intervention.

The quasi-experimental research design comprised a pre-post and follow-up assessment of an educational intervention that focused on self-reported ED provider KAP. The purpose of this intervention was to provide education on the most current state statute on opioid prescribing while informing ED providers of appropriate management of acute pain in order to adhere to state regulations, thereby engaging in safe opioid prescribing practices. The pre-post and follow-up data collection instruments were based on both evidence (e.g., related to knowledge of opioid addiction and the new state law) and the research questions. This method uses both qualitative and quantitative data to explore the impact of the current opioid prescribing statute: State of New Jersey: C.24:21-15.2. Law C.24:21-15.2 on opioid prescribing in the ED of a community-based hospital. Based on a systematic (critical, structured) review of published articles and synthesis of findings related to opioid prescribing, practices generally and specifically, a before and after intervention was performed measuring ED provider KAP when prescribing opioids. The PICO question for this design was: For emergency department providers, what effect will state mandated statutes have on opioid prescribing practices?

### **Population and Setting**

This investigation used a purposive sample of LIPs in the ED, comprised of 19 ED providers who are contracted to work at SOMC. The targeted samples of currently

employed ED providers were invited to participate in the study. The sample of providers consisted of five NPs, who are masters prepared and board certified with a specialty as Family Nurse Practitioners (FNP); and 14 physicians, of whom nine are board- certified emergency medicine physicians and five are pediatricians. This sample of 19 ED providers ranged in age from 30 to 70 years of age, primarily English speaking, and were contracted to work in a single 42-bed ED of a community based hospital, located in NJ. None of the participants were considered a vulnerable population and did not have special needs or require translation. The principal investigator (PI), a NP, works with the participants in a full-time capacity at SOMC.

Exclusion criteria for participation in this investigation included: any provider not employed during the designated time frame of the investigation of 7/15/18 to 9/18/18 in the SOMC ED. Any provider involved in this investigation, which included the PI, and one physician who was part of the scholarly project team as clinical site expert.

The inclusion criterion consisted of ED providers currently licensed and employed in the designated study site, who distributed Schedule II Opioids in prescription form at discharge, in the designated investigation time frame.

### **Protection of Human Subjects**

This scholarly project was reviewed and approved by the Georgetown University Institutional Review Board (IRB) and endorsed via written approval by the Envision Physicians Association (Appendix A) for the protection of human subjects. The DNP project PI completed the Collaborative Institutional Training Initiative (CITI) for Health Insurance Portability and Accountability Act (HIPAA) and human subjects, along with the training for social and behavioral certification prior to IRB approval.

There were no more than minimal risks to the ED providers who participated in this research. That is, the magnitude of harm or discomfort anticipated was not greater, in and of itself, than that ordinarily encountered in daily life. All participants in this study were informed that participation in the study involved no more than minimal risk and was confidential and voluntary. Participants were informed that completion of the survey served as their consent to participate. The surveys excluded any names and identifying information. The risk of participation in this study included potential loss of privacy, which was safeguarded using Survey Monkey © enable secure sockets layer (SSL) encryption along with the option to disable internet protocol (IP) address tracking to make the survey anonymous. Participation in this survey was voluntary, and the alternative was to not participate in the research. The informed consent process took place after accessing a link provided to Survey Monkey © which included an information sheet for participation in this investigation on the first page of the survey. The elements of the information sheet included: 1) an explanation of the purpose of the study; 2) an explanation that there will be no direct benefits and minimal risks to participation; 3) an assurance of confidentiality; and 4) an assurance of the participant's right to choose not to participate or to terminate participation at any time. Survey Monkey© automatically recorded the respondent time stamp at the time of participation. The survey allowed for "no response " as an option for every survey question. All surveys where a respondent cannot proceed without answering the question is a violation of the respondent's right to withhold information and therefore all questions were given the option of "comment". At any time during the survey, the participants were given an option to withdraw from survey. All survey results were entered into Microsoft ® Excel ® Software and the

Statistical Package for Social Sciences (SPSS) software, which are on an iMac computer that is password protected, this is where all data will be stored. Data collection from this study that is published or presented will be reported only as group data, and no participants will be identified by name. All paper documents will be shredded three years after completion of the study. All electronic documents Microsoft® Excel® and SPSS files of survey data will be destroyed three years after completion of the research study.

### **Project Sponsors and Resources**

Both the Chief executive officer North Division and the medical director of the ED project site supported the research being conducted for this DNP project and provided a formal letter of DNP project endorsement (Appendix A). The research participants were acutely aware of the opioid addiction epidemic and the challenges the ED faces when considering their patient population 50% of the time involves an initial complaint of acute onset of pain (AAEM, 2017). The provider survey portion of the study was carried out via Survey Monkey©. The PI has access to Survey Monkey© via a personal account. Finally, a statistician was consulted, who is not part of the study team and utilized for both study design and data analysis.

### **Procedures and Timeline**

The participants involved in this investigation participated in pre-and post surveys with an educational intervention that took place over a one-month period. Participants were recruited at the PI's place of employment via an email invitation, with the list of email addresses being provided by the ED medical director. Once invited via email, participants had the ability to access the self-directed PowerPoint from a location of their choosing. This educational intervention with self-reported surveys took place over one

month. The surveys for this investigation include an initial survey (T1) followed by an educational intervention and survey (T2) with a one month follow up survey (T3) to measure ED provider impact and sustainability.

### **Measurement Tools**

The aim of this research was to assess the impact of an educational intervention on state-mandated statutes and the self-reported perception of the impact on opioid prescribing practices among providers in the ED. This study addressed the effect state-mandated statutes have on the KAP of participating LIP's in the ED regarding current state statutes related to prescribing opioids. The measures of knowledge included but were not limited to the effects of opioids and the current state statute. Measures of attitude included, but were not limited to, opioid addiction stigma, clinicians' roles vis-a-vis opioid addiction, and the state statute on opioid prescribing practices. Measures of practice included, but were not limited to before and after the educational intervention and self-reported prescribing practices.

The pre- and post- educational surveys were carried out via Survey Monkey© extended version for evaluation. The invitation to participate included the informed consent script, sent by email to ED providers, which included a link to Survey Monkey©. The self-reported surveys T1 was a pre-intervention survey of KAP of opioid prescribing prior to the educational intervention; T2 was a survey taken immediately after the self-directed PowerPoint intervention; T3 was a one-month follow up survey taken by the participants to measure ED provider impact and sustainability of educational intervention.

Once the email was opened the participation letter described participation requirements and provided a link to the (T1) pre-educational survey consisting of 27 questions, followed by the educational PPT based on The New Jersey State Statute Related to Opioid prescribing practices. Upon completion of the PowerPoint, participants were directed to a link to a post educational survey, (T2) which comprised 17 questions. One month later there was an invitation via email inviting the participants to take a one-month follow up post educational survey (T3) that included 13 questions that explore the impact of the educational PowerPoint on their practice. Once the surveys were opened for participation, all invited participants received reminders bi-weekly via Survey Monkey© feature to use automatic follow up emails to complete the anonymous survey.

### **Pre-Educational Survey Assessment**

The pre-educational survey intervention was a self-completed survey (T1) developed by the PI to identify any correlations or variability among the ED providers KAP focusing on opioid prescribing and state policy. This phase of study took place before the educational intervention to assess ED provider's baseline KAP on the current opioid statute, prescribing and addiction. Item creation for the survey consisted of 27 questions that included a mix of demographic, dichotomous and 4-6-point Likert along with open-ended questions. Demographic questions included education level, area of practice and location in the US. Both closed and open-ended questions regarding their KAP of opioid prescribing in the ED as it relates to Statute C.24:21-15.2 enacted by the Senate and General Assembly of NJ. Other questions included were related to provider education prior to the intervention on opioid prescribing.

### **Educational Intervention**

The PI developed a self-directed, online Educational PowerPoint presentation following T1. The Educational PowerPoint was based on the Opioid Abuse Toolkit developed by Rutgers Ernest Mario School of Pharmacy. The authors of the tool granted this PI use via written permission (Appendix B). The educational intervention was self-directed lasting 10- 15 minutes and reviewed current U.S. and NJ opioid addiction statistics, NJ state statute for opioid prescribing, algorithm for opioid prescribing in acute pain, and recommendations for best evidence-based practice and how it relates to the ED.

### **Post-Educational Intervention Survey**

The purpose of T2 was to assess provider learning and immediate impact of educational intervention of KAP of opioid prescribing in the ED as it relates to the NJ Statute Item creation for the survey consisted of 17 questions that included a mix of dichotomous, 4-6-point Likert-type. Both closed and open-ended questions were measures of ED provider KAP of opioid prescribing in the ED as it relates to Statute C.24:21-15.2 enacted by the Senate and General Assembly of NJ and any formal education.

### **One-Month Follow-Up Survey**

The final survey (T3) was a measure of sustainability related to the educational intervention and its impact on ED provider KAP, measuring retained knowledge of the education intervention, along with any practice changes since the education was disseminated, through self-reporting. Item creation for the survey consisted of 13 questions that included a mix of demographic, dichotomous, 4- 6-point Likert-type, closed and open-ended questions. This was a measure of sustainability of ED provider

KAP when opioid prescribing in the ED, as it relates to the current state NJ Statute and any formal education that may have taken place since the educational PowerPoint.

### **Outcome Measure and Data Analysis Plan**

Descriptive analysis was used for the quantitative data, to assess differences in participating ED provider KAP for associations between demographic variables and within and across KAP. A statistician provided consultation through the process of quantitative analysis, in particular with respect to use of SPSS. The option to answer open-ended items in the surveys was made available for each question. The researcher used thematic analysis to develop categories within questions and themes across questions for T1, T2 and T3, and then identified themes across the times for those questions that are repeated in each survey. Dr. Jillson provided consultation related to qualitative analysis.

### **Conclusion**

This Chapter discussed how the DNP project used a quasi-experimental educational intervention with self-reported pre- and post- intervention surveys directly targeting ED providers KAP as it relates to opioid prescribing and the NJ State Statute. Self-reported pre- and post- intervention surveys included both qualitative and quantitative data to compare the immediate pre- and post- educational surveys to determine any differences in KAP before the educational intervention and after the educational intervention. The three-month follow up post survey determined the sustainability of KAP post educational intervention while determining whether the providers additional education in opioid prescribing. Information collected in this investigation will contribute to the development of future policy, education, and dissemination of opioid prescribing among LIP's in ED.

## **Chapter 4–Evaluation of Results**

The purposes of this chapter are to present the analysis of the pre-post and follow-up self-reported surveys; to summarize the findings based on the analysis; and to describe limitations of the study.

### **Analysis of Data**

#### **Completion of the Pre-Post and Follow-Up Surveys**

The purposes of the pre-post and follow up surveys were to assess the knowledge, attitudes and practices (KAP) of ED providers with respect to a newly regulated opioid prescribing law in NJ that affects ED providers statewide; and to assess the impact of a brief educational intervention concerning the prescribing law. Fourteen providers from the ED investigation site completed the pre-intervention survey. This represented 74% of the 19 potential participants invited to participate.

Given the small sample size and the fact that all participants are clinicians in the same ED, in order to protect privacy of the subjects the only demographic variable were related to clinical role. Of the participants six (46.2%) were emergency MDs/DO, four (30.8%) were pediatricians specializing in emergency medicine, and three (23%) family nurse practitioners (FNP). One participant did not provide an answer to their primary role. Participants also reported that 78.6% work in a non-academic hospital. The post-intervention questions were completed by 12 of the participants who had viewed the educational PowerPoint; one emergency medicine MD and one FNP did not answer the post PowerPoint questions. Ten people participated in the follow-up survey disseminated to the original 14 participants four weeks after the educational intervention. Participants were not issued an identification number and could not be linked to the pre-and post-

intervention responses or demographic characteristics. Table 1 is summary of participant response to demographic questions.

Table 1

Participant Sample Characteristics (N=14)		
	n	%
Primary Role		
Emergency MD/DO	6	42.9
Pediatrician in Emergency Medicine	4	28.6
Family Nurse Practitioner	4	28.6

### **Knowledge of State Statute and PMDP**

Participants were asked nine survey questions related to their current knowledge of the NJ statute on opioid prescribing prior to and directly following the educational intervention. The pre-intervention survey indicated that 13 of 14 participants believed there is a serious opioid addiction problem in NJ and one believed that there is a moderate problem. Twelve participants (86%) reported both reading the statute and receiving communication about the statute prior to participation in this investigation, while two participants had not read the statute, and two were unsure if they had received communication regarding the statute. Participants reported receiving communication about the statute from a variety of sources: eight from their employer, three from professional organizations and four reported communication from state agencies. One participant reported communication from both their employer and professional organization about the new statute. Most, 61.5% reported that they were aware of clinical guidelines for opioid prescribing prior to the implementation of the statute and nine had completing continuing education in opioid prescribing prior to the new regulation. Of the participants 93% reported that the statute pertains to ED providers and

10 are aware of the number of opioids they are able to issue based on the NJ state statute.

Prior to the educational PowerPoint participants were asked to explain in their own words what the NJ opioid prescribing statute requirements include. The majority, 57% (8 of the 14) correctly stated opioid prescriptions should be limited to a five-day supply of pills. Of the eight, four discussed using the PDMP prior to issuing an opioid prescription. Two of the same eight respondents reported that opioids should be prescribed at the lowest dose of immediate-release medication. Two of the 14 respondents discussed using the PDMP program only and two others discussed patient education on the risks of opioid addiction while offering alternative treatment plans. Overall, the majority of the participants correctly reported the limit as it pertains to opioids prescriptions, however, only one respondent discussed each of the statute's requirement, which includes a history and physical, consulting the PDMP, limiting the prescription to a five-day supply of immediate release opioids and discussing the risks of misuse, abuse and death associated with opioid prescriptions.

Table 2 summarizes participant responses regarding continuing education prior to the educational intervention, and their immediate post-intervention intent to seek continuing education, and their follow-up responses regarding participation in continuing education since the intervention.

Table 2

Continuing Education in Opioid Prescribing (Pre N=14, Post N=12 and Follow-up N=10)

	Pre- Intervention		Post- Intervention		Follow- Up	
	n	%	n	%	n	%
Yes	9	69.2	7	58.3	2	22.2
No	4	30.8	1	8.3	7	77.8
Unsure	0	0.00	4	33.3	0	0.00

Table three summarizes participant response to regarding the NJ opioid prescribing statute prior to the educational intervention. The table also indicates whether participants had reviewed the statute and follow-up indicates if they had reviewed the statute since the intervention.

Table 3

Pre-Post Read Statute and Reviewed at Follow-up (Pre N=14, Post N=12 and Follow-up N=10)

	Pre- Intervention		Post- Intervention		Follow- Up	
	n	%	n	%	n	%
Yes	12	85.6	11	91.7	5	50.0
No	1	7.1	0	0.00	5	50.0
Maybe	1	7.1	1	8.3	0	0.00

Table 4 summarizes participants' self- reported knowledge of opioid prescribing guidelines prior to the educational intervention. It also presents participants' intent to implement opioid prescribing guidelines into clinical practice, while follow-up indicates whether or not they actually implemented opioid prescribing guidelines since the intervention.

Table 4

## Use of Opioid Prescribing Guidelines (Pre N=14, Post N=12 and Follow-up N=10)

	Pre- Intervention		Post- Intervention		Follow- Up	
	n	%	n	%	n	%
Yes	5	38.5	10	83.3	5	50.0
No	8	61.5	0	0.00	5	50.0
Unsure	0	0.00	2	0.00	0	0.00

**Participant Post Intervention Intent**

In twelve responses 91.7% (11 of 12) reported they had read the current statute.

Participants were then asked to describe what opioid prescribing practice changes they intended to implement. Participants indicated that they would increase adherence to the statute by, “limiting quantity per prescription”, “limit to three days except holidays and weekends”. Respondents also indicated that they would be more specific in prescribing and not prescribe opioids to patients that report lost, stolen or destroyed prescriptions that were previously issued. One participant included limiting prescriptions while increasing patient education about NJ prescribing laws. Finally, two individuals reported that minimal or no change was necessary given that they attend to a pediatric population.

After participating in the educational intervention, three participants reported an intent to change an aspect of their current opioid prescribing practice by decreasing overall opioid prescribing, increasing patient education and better adherence to the current state statute.

In the one-month follow-up survey, 5 of 10 respondents had reviewed the state statute and two had sought out and completed continuing education on opioid prescribing. The three that reported and intended to seek continuing education and did not did not indicate

a reason. Five of the 10 also reported implementing opioid prescribing guidelines but did not indicate which aspects of the guidelines were put into effect.

Participants were asked to report any changes in opioid prescribing that they had implemented since the educational intervention; three themes were reported, increased adherence, alternative pain treatment and shared decision-making. Half of the participants (5 of 10) reported increased adherence to the current opioid prescribing statute. One participant reported, “taking an extra step to review any history prior to prescribing”, with two others indicating they, “follow the letter of the law” by “following guidelines”. One participant reported implementing” alternative pain management modalities as well as shared decision making with patients and parents”. Table 5 summarizes the participant’s self-reported knowledge on current NJ opioid prescribing laws.

Table 5

Pre- Intervention Knowledge of State Statute and PDMP		
	n	%
Read Statute	12	85.7
Received Communications Prior to change in State Statute:		
	12	85.7
Employer	8	57.1
Professional Organization	3	21.4
From State Agency	4	28.6
Aware of Clinical Practice Guidelines prior to New State Statute		
	5	35.7
I believe the opioid problem in my state is:		
Moderate	1	7.1
Serious	13	92.9
State policy includes emergency department providers:		
	13	92.9
Aware of number of opioids I am able to issue based on NJ state statute		
	10	71.4

### Beliefs and Attitudes about State Statute

More than a quarter of respondents (28.6%) slightly agreed, 28.6% agreed and 7.1% strongly agreed) that the current NJ statute influenced their prescribing habits. (Just over one-fifth (5, or 21.4%) of participants disagreed and 14.3% slightly disagreed. When asked if participants were satisfied with the available resources for treating acute pain 7.1% strongly disagreed while the majority 92.8%, agreed (21.4 % slightly agree, 64.3% agree, 7.1%strongly agree) there were adequate resources. In response to a question regarding their satisfaction with the current resources available to treat chronic pain, 42.9% were not satisfied (28.6% strongly disagree, 14.3% disagree) while 57% were satisfied (7% slightly agree and 50% agree). Participants were asked if they were able to

address their patients' pain without fear of legal or disciplinary recourse, 28.6% disagreed (14.3% disagree and 14.3% slightly disagree) and 71% of the participants agreed (7% slightly agree, 57% agree, 7% strongly agree). Table 6 summarizes the participant's satisfaction when treating both chronic and acute pain with opioids in the ED, along with any fears of legal action or discipline.

Table 6

Beliefs and Attitudes About State Statute						
	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
NJ State Policy has influenced my opioid prescribing practices	0	3 (21.4)	2 (14.3)	4 (28.6)	4 (28.6)	1 (7.1)
Satisfied with resources available to me for treating chronic pain	4 (28.6)	2 (14.3)	0	1 (7.1)	7 (50.0)	0
Satisfied with resources available to me for treating acute pain	1 (7.1)	0	0	3 (21.4)	9 (64.3)	1 (7.1)
I am able to address patient's pain without fear of legal or disciplinary action	0	2 (14.3)	2 (14.3)	1 (7.1)	8 (57.1)	1 (7.1)

### Use and Internet-to-Use PDMP

Prior to the educational intervention, although all 14 participants reported that they were aware of the PDMP for opioids, only three indicated they always use the it, while 42.8% indicated doing so often and one indicated doing so sometimes. Four reported that

they rarely used the PDMP before prescribing opioids. Participants identified accessibility related to logging in and passwords as barriers to accessing the program, calling it, “burdensome “and “time consuming in a busy ER”. Participants continued to identify barriers in functionality and accessibility when reporting factors that facilitate PDMP use. They reported the need for a nationwide program that could function interoperable with be the patient's electronic medical record (EMR) with a, “simple login and clear format”. Two other participants suggested implementation of a PDMP application that is accessible via cell phones and “e-Prescribing that is linked to the PDMP database in real time which triggers/flags when the prescription is not in line with the statute”.

Following the educational intervention, only one participant indicated intent to use the PDMP only rarely. However, in the one-month follow-up survey, of the 10 participants who answered, five-reported occasional use of the PDMP, one reported sometimes, 2 participants reported often and 2 reported always. Note that the response options in the pre-survey used the word “rarely” rather than “occasionally”, precluding direct comparisons. The results for self-reported PDMP use before prescribing opioids in the ED are shown in Table 7.

Table 7

Use of PDMP (Pre N=14, Post N=12 and Follow-up N=10)

	Pre		Post		Follow-Up	
	n	%	n	%	n	%
Rarely (occasionally)	4	28.6	1	8.33	5	50.0
Sometimes	1	7.14	4	33.3	1	10.0
Often	6	42.9	4	33.3	2	20.0
Always	3	21.4	3	25	2	20.0

### Participant Recommendations Regarding Prescribing Practices

All three surveys – pre-post and follow-up – contained open-ended questions allowing participants the opportunity to express their perceptions of the current NJ law as it pertains to prescribing opioids in acute pain. Across the surveys and across the questions, there were three recurring themes among the responses; these are: access to care, policy and education. Categories in each of the themes included, resources, disciplinary action, pain management, addiction, clinical leadership and patient centeredness.

#### Access to Care

When treating both acute and chronic pain patients in the ED, several participants linked policy to access of care, with one respondent suggesting a hospital policy to limit the number of repeat visits for a person seeking opioids for chronic pain without follow-up care in place. Another respondent suggested that hospitals decrease the emphasis on

patient satisfaction and place emphasis on decreasing the barriers in access to care related to pain management, this would alleviate the burden placed on the ED provider when prescribing opioids. The same respondent acknowledged that it is the decreased availability of access to medical care that leads to decreased patient satisfaction. Patients with inconsistent pain management and poor clinical outcomes are “putting the ER providers in an unattainable situation”.

### **Policy**

Several participants recommended that both state law and hospitals should increase limits opioid prescribing while increasing patient education in state laws and opioid misuse, abuse and addiction. Another approach was a, “uniform hospital policy” and “department policy” recommended for all LIPs prescribing opioids in a hospital. One respondent acknowledged that the current opioid epidemic was a result of past failures in both the “medical culture and policy” but the “current mandate was an improvement”. Two respondents found the current NJ statute to be unclear and penal, calling for “clarification of second request for prescription” and for the “wording to be less punitive and more resourceful”. There were recommendations to lessen the restrictiveness of the statute, taking into account challenge of individualizing appropriate patient care when managing pain.

### **Education**

Another recurring theme among the participants was both patient and provider education regarding opioid prescribing and addiction. Two participants suggested that ED enact a strategy that requires that patients should be educated about the negative consequences of opioid prescribing, with one commenting that this should be applicable

to any institution. One respondent suggested a media campaign that targets,” public education on the laws and penalties” LIPs are obligated to follow. There was also a recommendation that signs be placed in the ED outlining the current laws and opioid prescribing policies, “to convey to the patients what the institutions prescribing practices are”. Recommendations extended to LIPs outside of the ED, citing opioid prescribing education in policy was needed in Primary Care Practices. Increased education in primary care would lift the burden of opioid prescribing in the ED, “primary care physicians should become more aware of policy instead of refusing to prescribe and referring to the ED”. Two participants indicated they were satisfied with the status quo. While one participant recommended that strengthening the ability of providers to adhere to the NJ statute starts with formal education (medical, NP and PA school) followed by continuing education after graduation. Finally, clinical leadership was recommended stating, “We are the only ones that can stem the tide. “Let’s keep true to the course and keep patients number one!”

### **Evaluation of Educational Presentation**

Participants were asked to evaluate the educational PowerPoint to provide feedback regarding its effectiveness. When asked in the if the educational PowerPoint presented would influence their opioid prescribing practices 81.6% (27.3% slightly agreed and 54.3% agreed), while 18.2% (two of the 12) participants disagreed that materials presented would influence their practice. All participants reported that they believe the material presented was clear and concise, with 75% agreeing that this was the case, 16.7% strongly agreeing, and 8.3% slightly agreeing. Similarly, 75% of participants agreed and 16.7% strongly agreed that the recommendations in the educational

PowerPoint were consistent with EBP opioid prescribing; one respondent slightly disagreed. All participants (100%) reported that they would be able to apply the knowledge gained from participating in the educational intervention into their opioid prescribing practices (8.3% slightly agreeing, 66.7% agreeing and 25% strongly agreeing). Participants (100%) also reported that the material presented was useful in their clinical practice (9.1% slightly agreed, 63.6% agreed and 27.3% strongly agreed) and would recommend the educational PowerPoint to others (16.7% slightly agreed, 58.3% agreed and 25% strongly agreed).

In the one-month follow-up survey, 90% of the participants responded that they had implemented the knowledge they learned from the educational PowerPoint into practice with one participant, with 30% slightly agreeing, 50% agreeing and 10% strongly agreeing. Just 10% strongly disagreed, indicating that they had not done so. The same responses were given when reporting the usefulness of the intervention when applied to practice with nine out of 10 reporting (30% slightly agree, 50% agree and 10% strongly agree) that the material presented was useful, while one participant (10%) strongly disagreed. Table 8 is a summary of the results for the post education survey.

Table 8

## Evaluation of Educational Presentation (n = 12)

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Material presented will influence my opioid prescribing practices.	0	2 (18.2)	0	3 (27.3)	6	0
Material Presented was concise and informative.	0	0	0	1 (8.3)	9 (75.0)	2 (16.7)
The recommendations are consistent with evidenced based opioid prescribing.	0	0	1 (8.3)	0	9 (75.0)	2 (16.7)
I will be able to apply the knowledge learned to opioid prescribing practice.	0	0	0	1 (8.3)	8 (66.7)	3 (25.0)
The material presented is useful to my practice.	0	0	0	1 (9.1)	7 (63.6)	3 (27.3)

I would recommend the presentation to others.	0	0	0	2 (16.7)	7 (58.3)	3 (25.0)
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Follow Up Evaluation of Educational Presentation (n = 10)

I have applied the knowledge learned from the educational module into practice.	1 (10.0)	0	0	3 (30.0)	5 (50.0)	1 (10.0)
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The material presented has been useful for my practice	1 (10.0)	0	0	3 (30.0)	5 (50.0)	1 (10.0)
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**Summary of Findings and Outcomes**

The primary purpose of this scholarly project was to assess the impact of an educational intervention on NJ State Statute on opioid prescribing and self-reported ED provider KAP of the regulation. After reviewing the educational PowerPoint, 91.7% indicated they had read the statute prior to the PowerPoint presentation, while one participant said they had not read the statute earlier now indicated they had read it. One respondent who had indicated they had not read the statute earlier was unsure whether they had read it after the PowerPoint presentation. Over half (58.3%) said they would seek and complete continuing education in opioid prescribing and 83.3% said they would seek and implement opioid practicing guidelines. Almost all (91.7%), correctly indicated that the current NJ state policy regarding opioid prescribing did NOT pertain ONLY to

ED providers. The vast majority (91.7%) agreed that their current opioid practices were appropriate. Specifically, 8.3% slightly agreed, 57.1% agreed, and 14.3% strongly agreed. Only one (8.3%) slightly disagreed. Five (50%) of those completing the follow-up survey responded that they had reviewed the current NJ opioid prescribing statute since reviewing the educational PowerPoint. Only two (20%) had completed any continuing education in opioid prescribing in the time since the educational PowerPoint. Five (50%) implemented opioid practice guidelines since the educational PowerPoint. Sixty percent agreed that reviewing the NJ state prescribing policy changed their practices. Eighty percent agreed that the educational PowerPoint influenced their opioid prescribing practices. Directly following the PowerPoint presentation, there was a notable shift of intention to access the PDMP; three people who said they rarely used the PDMP, indicated they would now use the program more often (1 sometimes, 1 often and 1 always) Table 7 shows responses for use of PDMP before and after the educational intervention for the 12 participants who completed the post-presentation questions. The percentage of those who said they would always use the PDMP increased from 8.3% to 25%.

At follow-up, participants reported a decrease in use of the PDMP. Prior to the educational PowerPoint, 64.3% said they used the PDMP often or always; only 40% said they used PDMP often or always at follow-up. At follow-up, 50% said they only used it occasionally. Again, noting that the response options in the pre-survey used the word “rarely” rather than “occasionally” precluding direct comparisons. In the pre-survey 28.6% said they rarely used the PDMP. Nevertheless, 30% said they had increased their use of PDMP while prescribing opioids, 40% said there had been no change in their use

of the PDMP, and 30% were not sure. Of those who said they had increased their use of the PDMP, all three said the increase was a result of their participation in the educational presentation.

## **Chapter 5–Discussion and Conclusions**

### **Discussion of Findings**

In 2016, the CDC (2018) reported that nationally 40% of all opioid overdose deaths involve an opioid prescription with an estimated 140,000 opioid-related ED visits. While the literature demonstrates that when opioid prescribing guidelines are implemented in an ED, opioid prescribing decreases (Del Portal et al., (2016), Fox & Li (2013), Ganem et al., (2015), Osborn et al., (2016) and Smulowitz et al., (2016) ; while information on the effects of implementing state legislation and its effects on opioid prescribing continues to be limited.

The purpose of this scholarly project was to assess the impact of state regulation based on KAP of participating ED providers that used an educational intervention and self-reported surveys to regarding opioid prescribing. This project utilized pre-post and follow-up electronic surveys to assess the PowerPoint educational intervention. This design was used to explore the ED providers KAP on the current NJ opioid prescribing laws providing insight that will contribute to the development of future policy, education, and dissemination of opioid prescribing among ED providers.

This study concluded that ED providers report continuing education with EBP guidelines increases ED provider adherence to state opioid prescribing statutes. While providers demonstrated knowledge of current statute, they also identified the need for additional provider and patient education on the current statute. Post-intervention,

providers did report intent to seek continuing education on post-intervention; however, in the follow-up survey the majority of participants who had indicated intent to do so reported that they had not actually completed continuing education regarding the statute. Half of participants did implement the opioid practicing guidelines, indicating that the intervention had a positive influence on their clinical practice.

The majority of respondents reported that the statute had influenced their prescribing practices, which is consistent with the current research findings that opioid prescribing guidelines decrease aberrant prescribing even including implantation of state regulation (Del Portal et al., (2016), Fox & Li (2013), Ganem et al., (2015), Osborn et al., (2016) and Smulowitz et al., (2016).

### **Limitations**

Limitations of this scholarly project included a small, targeted, regionally based sample. The sample was recruited from a single department, limiting the statistical analysis to descriptive statistics only. This method was used to protect the identity of the small-targeted samples identity. This study was regionally based in a small community ED and results may not be generalized to other EDs, providers who prescribe opioids in different settings or other geographical areas in the U.S.

Other limitations included the delays in IRB approval from the local facility. The many delays resulted in a shorter time frame for survey participation, which may have contributed to the decrease in participation in the follow-up survey. Also, prior to the follow-up survey there was no opportunity for announcements or email reminders. In addition, there was not a monthly ED provider meeting during the timeframe from post-

intervention survey to the follow-up survey, which obviated the possibility to announce when the follow-up survey would open.

Questions on the pre-post and follow-up surveys were based on the NJ state statute, PDMP use, opioids addiction and education utilizing open-ended questions and Likert-type questions. In questions concerning education, participants indicated that they had received continuing opioid prescribing education either before or after the intervention; however, neither time did participants report from where they had received their education, despite opened-ended questions directly asking them. This also occurred when the participants were asked if they followed opioid prescribing guidelines. Those who reported yes did not indicate the guidelines they had used, making it difficult to assess the source of continuing education and EBP guidelines.

Additional limitations included having the pre-and post-surveys and educational intervention carried out at one time. There were a total of 43 questions with the self-directed educational PowerPoint in the T1 and T2 phase. This could have been excessively time consuming and could be separated in future studies. This may additionally explain why two participants who completed the pre-intervention survey did not complete the post-intervention survey. A final limitation was using an electronic format vs. other platforms (e.g. class, live webinar or packets). Using different platforms might have yielded a larger response rate.

### **Implications for Practice, Education, Research and Policy Dissemination**

Given the breadth and severity of our nation's opioid crisis, it is evident that we need to further identify the factors that contribute to ED provider adherence to state law when

prescribing opioids is necessary. This study provides implications for future research and for exploration of policy and provider education related to opioid prescribing.

### **Policy**

In terms of policy at the state level, lawmakers, in conjunction with the medical community, should implement mandatory annual opioid prescribing education as part of their initial and annual licensure requirements. For continued quality improvement pertaining to statute adherence, state lawmakers should survey ED providers annually to evaluate the effectiveness of the law while identifying barriers and solutions to improve adherence.

### **Education**

Medical facilities (e.g. hospitals, urgent care, ambulatory centers) should implement annual competency opioid prescribing training based on individual state statutes. Also, facilities should require new employees to complete continuing education based on state, facility and departmental opioid prescribing guidelines. Finally, opioid prescribing education should be implemented in the academic training of all providers including medical schools, NP programs, PA programs and dental schools. Initiating opioid education into the core development of future clinicians allows for best practice directly following completion of schooling and would provide increased knowledge and skill when entering the workforce for opioid prescribing. With advanced knowledge in the use of opioid prescribing guidelines, the varying patterns of opioid prescribing will decline; and directly contribute to the overall decrease of opioid misuse, addiction and death.

### **Practice**

Healthcare related facilities should also require EDs to conduct biannual audits of opioid prescribing practices based on chart review. This practice allows for identification of inconsistencies in opioid prescribing. Once the gaps are identified targeted education and training tailored to support ED providers in achieving statute adherence can be developed.

### **Dissemination**

States should consider developing and installing an interoperable computer system that can link the PDMP directly to EMRs that provides the most up-to-date opioid information to be easily accessed. This system should flag providers when identifying when their prescribing will not meet the key requirements of the state statute.

### **Recommendations for Future Study**

With the vast majority (90%) of participants indicating that they had implemented knowledge gained from participating in the educational intervention suggests that further research in an adequately powered study would be beneficial. This would continue to enhance the development of opioid prescribing protocols that increase provider adherence to opioid prescribing state statutes when treating both acute and chronic pain.

Additionally, involving a larger sample size from multiple institutions within a state or across states, or through a national sample of providers through professional associations (e.g., ANA, AAEM) would continue to educate providers on the current opioid prescribing state statutes while strengthening the overall workforce education.

Future investigations into how providers outside of the ED opioid prescribing patterns directly impact ED providers by refusing to issue opioid prescriptions.

Further studies in to identify the barriers when facilitating the PDMP; quality improvement would aid state departments in creating a user-friendly system that increased ED provider adherence to the state statute.

### **Conclusion**

Understanding the factors that impact ED providers' perception of KAP when applying state statues in opioid prescribing enhances the ability to target key factors that contribute to non-adherence while providing solutions that are attainable. This supports McDonald (2012) who suggested that varying patterns of opioid prescribing may be linked to individual provider settings, personal attitudes, knowledge and values “stemming from local medical subcultures”. This approach gives ED providers the opportunity to have a voice that directly impacts the dissemination of policy and education in opioid prescribing. Ultimately, a multi-collaborative approach is needed between ED providers and in general, lawmakers, and local medical facilities that can create regulation that reinforces the KAP that will “strike the right balance between the risks and benefits of opioids” (McDonald et al., 2012).

## Appendices

### Appendix A

#### Employer Endorsement Letter



May 29, 2018

Hackensack Meridian  
Southern Ocean Medical Center  
1140 Route 72 West  
Manahawkin, NJ 08050

To Whom It May Concern,

I am writing to you in support of Kimberly Vanesko, FNP-BC and her doctoral project through Georgetown University.

Kim is currently employed by Envision Physician Services as an NP at Southern Ocean Medical Center in Manahawkin, New Jersey, which is a facility under my management. I am both aware of and in support of Kim's doctoral project entitled "Opioid Prescribing in the Emergency Department".

Please feel free to contact me should you wish me to expand on anything stated here.

Sincerely,

A handwritten signature in black ink that reads "Russell H. Harris".

Russell H. Harris, MD, MMM, CPE, FACEP  
Executive Vice President  
Mid-Atlantic and Southeast Operating Units

CC: Dr. Irene Jillson via email @ Irene.jillson@georgetown.edu

## Appendix B

### Rutgers School of Pharmacy Permission Letter

Saira Jan <Saira\_Jan@horizonblue.com>

Wed, Feb 28, 11:09 AM

to Alex, me

Kim

Please feel free to use this for your educational purposes. I am copying Alex who can share what we have done and utilized over the last year through Rutgers students. The more we use this the better it is. All materials are free and reproducible as long as you don't change the content.

We would also encourage you to let us know if there are modules that are missing or you need developed and I will get them developed for you . Please distribute these materials to as many groups as you want ☺ best Wishes

Saira

Saira Jan

Saira A Jan, M.S., Pharm.D.

Director of Pharmacy Strategy and Clinical Integration

Horizon Blue Cross Blue Shield of New Jersey

Clinical Professor, Rutgers State University of New Jersey

W: (973) 466-4575

[saira\\_jan@horizonblue.com](mailto:saira_jan@horizonblue.com)

## Appendix C

### Participation Letter

You are being asked to participate in a research study conducted by Kimberly Vanesko FNP-BC a Doctoral Candidate from the Doctor of Nursing Practice Program at Georgetown University, from the Emergency Department at Southern Ocean Medical Center. You are being asked to participate in this study that will examine the effects of state mandated legislation on opioid prescribing in the emergency department based on provider knowledge, attitude and practice.

The purpose of this study is to describe the effects of state-mandated statutes on opioid prescribing practices by Licensed Independent Practitioners (LIP's) in a community hospital Emergency Department (ED). The LPI's in this study include emergency department physicians, emergency department pediatrician and advanced practice nurses.

Please read the information below and ask questions about anything you do not understand before deciding whether or not to participate. Your participation in this research study is completely voluntary.

If you decide to participate, you will receive an invitation via Survey Monkey © to your personal email inviting you to participate in an educational PowerPoint module with surveys. This email will contain an embedded link that will take you to the Informed Consent Script. Upon saying yes to taking the first survey; you will have consented to the participation. The first survey is 27 questions in length, which includes both close and open-ended questions, upon completion there will be an embedded link that will link the participant to a 5-minute educational PowerPoint video on the current opioid prescribing statutes in NJ. Following the PowerPoint, a link will bring the participant to a post educational question survey, 16 questions in length. Three months later there will be an invitation via email inviting you to take a three-month follow up post educational survey also including 13 questions.

There are no other alternatives to the study other than not participating. Participation is voluntary and whether you participate or not will not affect your employment in any way. You have the right to decide not to participate at anytime and can stop completing the surveys.

All surveys will be issued to your email addresses via Survey Monkey©. All information is de-identified for your anonymity. Your answers to the survey are anonymous and cannot be linked back to you in anyway. Please do not print your name on the survey if you decide to participate. If you do not want to answer a question for any reason you are free to skip it.

There are no direct/guaranteed benefits to participating in this research study, other than contributing to the body of knowledge related to opioid prescribing among emergency department providers. There is no foreseeable risk since the survey is anonymous and there will be no way to link your responses to you. Surveys using Survey Monkey©: In addition, confidentiality will be protected through Survey Monkey's encryption. Privacy will be safeguarded using Survey Monkey © enable SSL encryption along with the option to disable IP address tracking to make the survey anonymous. This allows the survey link and survey pages to be encrypted during transmission to the participants. All responses will be reported as aggregated data only. Once you submit your completed survey, there will be no way to withdraw your responses from the study because the survey contains no personal identifying information.

Information collected in this investigation will contribute to the development of future policy, education, and dissemination of opioid prescribing practices among ED providers. This study will identify ED provider knowledge on current opioid state statutes, factors that influence prescribing and how it contributes to their current practice while prescribing opioids. The findings of this study will contribute to future ED provider education, information dissemination and opioid prescribing policy. This investigation will assist policymakers, providers, systems, hospitals, and emergency room departments in identifying barriers to opioid prescribing in the emergency department.

If you have any questions, concerns, or complaints about the research please contact the Principal Investigator Kimberly Vanesko FNP-BC. She will be glad to answer any of your questions. Kimberly Vanesko's number is 732-966-7662. Additionally, any questions, concerns or complaints about the research

If you have questions about your rights as a research participant, or concerns or complaints about the research, you may contact both the Georgetown University Institutional Review Board (IRB) Chairperson, Kristen Katopol via phone or email at [krk63@georgetown.edu](mailto:krk63@georgetown.edu) or 202-687-0328.

Thank you for considering participating in this study. If you decide to participate, please keep this sheet and retain for your records.

Kimberly Vanesko FNP-BC  
Principal Investigator

## Appendix D

### Pre-Educational Intervention Survey

Opioid Prescribing in the Emergency Department: A Pre-Intervention Survey

Kimberly Vanesko, FNP-BC

DNP Candidate

Georgetown University

Opioid Prescribing the Emergency Department Data Collection Tool

Southern Ocean Medical Center

Please choose the most applicable answer for the following questions Please provide only one answer for each question unless otherwise indicated.

1. What is your primary role in the Emergency Department? (Select one.)
  - A. Emergency Medicine Doctor
  - B. Pediatrician in Emergency Medicine
  - C. Doctor of Osteopathy in Emergency Medicine
  - D. Family Nurse Practitioner
  - E. Advanced Nurse Practitioner
  
2. Type of facility in which I practice in More than 50% of the time:
  - A. Academic Hospital
  - B. Non-Academic Hospital
  
3. Region of the United States in which I reside:
  - A. Northeast
  - B. Southeast
  - C. Midwest
  - D. Southwest
  
4. I have read the current state statute for opioid prescribing in New Jersey.
  - A. Yes
  - B. No
  - C. Maybe
  - D. Never
  
5. I received communication prior to May 15, 2017 about the change in the New Jersey state statute for opiate prescribing practices Yes
  - A. No
  - B. Maybe
  - C. Never
  - D. Unsure

6. If communication was received prior to May 15, 2017 about the new state opioid prescribing statute, I received communication from (check all that applies)

- My Employer \_\_\_
- Professional Organization \_\_\_
- State Agency (specify) \_\_\_
- Other (specify) \_\_\_

7. Explain in your words the prescribing requirement of the New Jersey state statute for opioid prescribing.

8. Prior to the new state statute were you aware of any clinical practice guidelines for opioid prescribing?

- A. Yes
- B. No

9. If your response was yes to question eight please describe the practice guidelines.

of practice guidelines	Date guidelines issued	Guidelines issued by

10. have you completed continuing education beyond college/residency in opioid prescribing?

- A. Yes
- B. No

11. If your response was yes to question 10 please specify each continuing event/residency in opioid prescribing completed.

Title/Name of Course/Program	Date Taken/Duration in hours	at (e.g., employer, university)	Sponsored by (e.g., pharmaceutical company)

12. I am aware of the State Prescription Drug Monitoring Program for Opioids.

- A. Yes
- B. No

13. How often do you currently use the PMP during your shift when prescribing opioids ?

- A. Never
- B. Rarely
- C. Sometimes
- D. Often
- E. Always

14. Identify the barriers to using the PMP.

Comments:

15. Identify factors that facilitate using PMP.

Comments:

16. I believe there is an opioid problem in my state.

- A. No problem
- B. Minimal problem
- C. Moderate problem
- D. Serious problem

Comment:

17. I believe the recent NJ state opioid prescribing policy enacted May 15, 2017 has influenced my opioid prescribing practices.

- A. No influence
- B. Minimal influence
- C. Moderate influence
- D. Significant influence

18. Explain in your own words how the current opioid prescribing statute has influenced your prescribing practices. If you believe there is no influence, indicate the reason for this.

Comments:

19. I believe the current New Jersey state policy regarding opioid prescribing practices includes to emergency department providers.

- A. Yes
- B. Maybe
- C. No
- D. Not sure

20. When treating patients with chronic pain, I am satisfied with the resources available to me at my practice organization Strongly Disagree

- A. Disagree
- B. Slightly Disagree
- C. Slightly Agree
- D. Agree
- E. Strongly Agree

21. When treating patients with acute pain, I am satisfied with the resources available to me at my practice organization.

- A. Strongly Disagree
- B. Disagree
- C. Slightly Disagree
- D. Slightly Agree
- E. Agree
- F. Strongly Agree

22. I believe that I am able to address my patient's pain without fear of legal action or other disciplinary action related to the new state statute Strongly Disagree

- A. Disagree
- B. Slightly agree
- C. Slightly Agree
- D. Agree
- E. Strongly Agree

23. In your opinion what factors should be changed to make opioid prescribing easier for Emergency Room Providers? (Explain in your words)

24. I am aware of the amount of opioids I am able to issue in a prescription, based on the amount allowed by the New Jersey state statute:

- A. Yes
- B. No
- C. Not Sure

25. If yes please specify how the amount you issue is determined.

27. If no specify how the amount of opioid you issue is determined

27. Please add any additional comments you believe would contribute to strengthening the ability of clinicians to adhere to the NJ statute regarding opioid prescribing practices.

## Appendix E

### Post-Educational Intervention Survey

Opioid Prescribing in the Emergency Department: A Post-Intervention Survey

Kimberly Vanesko, FNP-BC

DNP Candidate

Georgetown University

Opioid Prescribing the Emergency Department Data Collection Tool

Southern Ocean Medical Center

Please choose the most applicable answer for the following questions Please provide only one answer for each question unless otherwise indicated.

1. I have read the current state statute for prescribing in New Jersey.
  - A. Yes
  - B. No
2. I will seek and complete continuing education beyond college/residency in opioid prescribing?
  - A. Yes
  - B. No
3. Will you seek and implement opioid practicing guidelines for opioid prescribing?

of Practice Guidelines	Guidelines Issued	Lines Issued By

4. How often do you anticipate accessing the Prescription Drug Monitoring Program (PMP) during your shift when prescribing opioids?
5. I believe, after reviewing the recent NJ state opioid prescribing policy enacted May 15, 2017, that my opioid prescribing practices will change:
  - A. Strongly Disagree
  - B. Disagree
  - C. Slightly Disagree
  - D. Slightly Agree
  - E. Agree
  - F. Strongly Agree
6. Explain in your own words the types of changes you will make to your current opioid prescribing practices.

7. I believe the current New Jersey state policy regarding opioid prescribing practices pertains to emergency department providers only.

- A. Strongly Disagree
- B. Disagree
- C. Slightly Disagree
- D. Slightly Agree
- E. Agree
- F. Strongly Agree

8. I believe after reviewing the New Jersey state policy that my current opioid prescribing practices are appropriate.

- A. Strongly Disagree
- B. Disagree
- C. Slightly Disagree
- D. Agree
- E. Strongly Agree

9. I believe that the educational presentation will influence my opioid prescribing practices?

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

Comment:

10. The educational presentation was concise and informative.

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

Comments:

11. The recommendations are consistent with the findings for opioid prescribing.

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

Comments:

12. I will be able to apply the knowledge learned to opioid prescribing practice.

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

Comments:

13. The material present is useful for my practice.

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

14. What aspect of the educational presentation can be improved?

Comments:

15. Would you recommend this educational presentation to others?

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

Comments:

16. Please add any additional comments you believe would contribute to strengthening the ability of clinicians to adhere to the NJ statute regarding opioid prescribing practices.

## Appendix F

### One-Month Post-Educational Intervention Survey

Opioid Prescribing in the Emergency Department: One-Month Follow-up Survey

Kimberly Vanesko, FNP-BC

DNP Candidate

Georgetown University

Opioid Prescribing the Emergency Department Data Collection Tool

Southern Ocean Medical Center

Please choose the most applicable answer for the following questions. Please provide only one answer unless otherwise indicated.

1. Since the educational module have reviewed the current New Jersey opioid prescribing statute.

A. Yes

B. No

2. Since completing the Opioid Prescribing Educational Module, I have completed continuing education in opioid prescribing.

A. Yes

B. No

2a. If so please describe which program you completed.

3. Have you implemented any opioid practicing guidelines for opioid prescribing after the Opioid Education Module?

A. Yes

B. No

3a. If yes please specify which guidelines

4. Following your completion of the Opioid educational module, how often are you accessing PMP during your shift when prescribing opioids changed?

A. Often

B. Always

C. Sometimes

D. Occasionally

E. Never

5. Does this represent an increase in your accessing the PMP during your shift when prescribing opioids?

- A. Yes
- B. No

6. If yes do you believe that this increase is a result of your reading the educational presentation through this study?

- A. Yes
- B. No

7. I believe that, after reviewing the recent NJ state opioid prescribing policy my overall opioid prescribing practices have changed:

- A. Strongly Disagree
- B. Disagree
- C. Slightly Disagree
- D. Slightly Agree
- E. Agree
- F. Strongly Agree

8. Explain in your own the changes you have made to your current opioid prescribing practices.

9. I believe that the educational presentation has influenced my opioid prescribing practices?

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

Comment:

10. I have applied the knowledge learned into practice when prescribing opioids.

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

Comments:

11. The material present has been useful for my practice when prescribing opioids.

- A. Strongly Agree
- B. Agree
- C. Slightly Agree
- D. Slightly Disagree
- E. Disagree
- F. Strongly Disagree

12. In your opinion what aspect of the educational presentation can be improved?

Comments:

13. Please add any additional comments you believe would contribute to strengthening the ability of clinicians to adhere to the NJ statute regarding opioid prescribing practices.

## References

- American Academy of Emergency Medicine. (2017). <http://www.aaem.org>
- Center for Connected Health Policy, The National Telehealth Policy Resource Center. (2017). <http://www.cchpca.org/sites/default/files/resources/Telehealth%20Laws%20and%20Policies%20Report%20FINAL%20Fall%202017%20PASSWORD.pdf>
- del Portal, D. A., Healy, M. E., Satz, W. A., & McNamara, R. M. (2016). Impact of an opioid prescribing guideline in the acute care setting. *The Journal of Emergency Medicine, 50* (1), 21-27.
- Fox, T. R., & Li, J. (2013, September 1). A performance improvement prescribing guideline reduces opiate prescriptions for emergency department dental pain patients. *Annals of Emergency Medicine, 62*(3), 237-240. Retrieved from <https://innovations.ahrq.gov/profiles/emergency-department-and-urgent-care-clinicians-use-protocol-reduce-opioid-prescriptions>
- Ganem, V. J., Mora, A. G., Varney, S. M., & Bebart, V. S. (2015). Emergency department opioid prescribing-practices for chronic pain : a 3-year analysis. *Journal of Medical Toxicology, 11*, 288-294. <http://dx.doi.org/DOI> 10.1007/s13181-014-0449-5
- Getzen, T. E. (2013). *Health economics and financing* (5th ed.). Library of Congress: John Wiley & Sons.
- Gren, L. W., & Kreuter, M. W. (1991). *Health promotion planning an educational approach* (2 ed.). Ca: Myfield Publishing Company.

- Jan, S. A., & Wiggall, A. J. (2018). Opioid abuse toolkit resources for New Jersey communities. Retrieved from <https://pharmacy.rutgers.edu/wp-content/uploads/Opioid-Abuse-Toolkit-2018-Resources-for-New-Jersey-Communities-2018-003.pdf>
- Jordan, A. E., Blackburn, N. A., DesJarlais, D. C., & Hagan, H. (2017). Past-year prevalence of prescription opioid misuse among those 11 to 30 years of age in the United States: a systematic review and meta-analysis. *Journal of Substance Abuse Treatment, 77*, 31-37.  
<http://dx.doi.org/http://dx.doi.org/10.1016/j.jsat.2017.03.007>
- Lee, S. S., Choi, Y., & Pransky, G. S. (2015). Extent and impact opioid prescribing for acute occupational low back pain inn the emergency department. *The Journal of Emergency Medicine, 50*(3), 376-384.
- Mazurek Melnyk, B., & Fineout-Overholt, E. (2015). Making the case for evidence-based practice and cultivating a spirit of inquiry. In *Evidence-based practice in nursing & healthcare* (3 ed.). Philadelphia: Wolters Kluwer.
- Mc Donald, D., Carlson, K., & Izrael, D. (2012, October). Geographic variation in opiate prescribing. *National Institute of Health, 13*, 1-17.  
<http://dx.doi.org/doi:10.1016/j.jpain.2012.07.007>
- Moran, K., Burson, R., & Conrad, D. (2017). *The doctor of nursing practice scholarly project a framework for success* (2 ed.). Burlington, MA: Jones & Bartlett Learning.
- National All Schedules Prescription Reporting Act. (2005). <http://nasper.org/facts.htm>

National Governors Association. (2016). <https://www.nga.org/cms/news/2016/governors-sign-compact-to-fight-opioid-addiction>

New Jersey State Legislature. (2018).

<http://www.njleg.state.nj.us/bills/BillsByKeyword.asp>

Osbourn, S. R., Yu, J., Williams, B., Vasilyadis, M., & Blackmore, C. C. (2016).

Changes in provider prescribing patterns after implementation of an emergency department prescription opioid policy. *Pharmacology in Emergency Medicine*, 52 (4), 538-546. <http://dx.doi.org/DOI:>

<http://dx.doi.org/10.1016/j.jemermed.2016.07.120>

SAMHSA : The Dawn Report. (2013).

<http://archive.samhsa.gov/data/2k13/DAWN127/sr127-DAWN-highlights.htm>

Schein, E. H. (2010). . In *Organizational culture and leadership* (4th ed.). San Francisco, CA: Jossey-Bass A Wiley Imprint.

Smulowitz, P. B., Cary, C., Boyle, K. L., Novack, V., & Jagminas, L. (2016). Variation

in opiate prescribing patterns between ed providers. *Internal and Emergency Medicine*, 11, 1121-1124. <http://dx.doi.org/DOI 10.1007/s11739-016-1505-8>

Southern Ocean Medical Center. (nod). <http://www.southernoceanmedicalcenter.com>

Substance Abuse and Mental Health Administration. (2013).

<http://archive.samhsa.gov/data/2k13/DAWN127/sr127-DAWN-highlights.htm>

Substance Abuse and Mental Health Services Administration. (2013).

<http://archive.samhsa.gov/data/2k13/DAWN127/sr127-DAWN-highlights.htm>

Surratt, H. L., O'Grady, C., Kurtz, S. P., Stivers, Y., Cicero, T. J., Dart, R. C., & Chen, M.

(2014). Reductions in prescription opioid diversion following recent legislative

interventions in Florida. *Pharmacoepidemiology Drug and Safety*, 23, 314-320.

<http://dx.doi.org/DOI: 10.1002/pds.3553>

Weiss, A. J., Elixhauser, A., Barrett, M. L., Steiner, C. A., Bailey, M. K., & O'Malley, L.

(2017). Opioid-related inpatient stays and emergency department visits by state,

2009-2014. Retrieved from <https://www.hcup->

[us.ahrq.gov/reports/statbriefs/sb219-Opioid-Hospital-Stays-ED-Visits-by-](https://www.hcup-us.ahrq.gov/reports/statbriefs/sb219-Opioid-Hospital-Stays-ED-Visits-by-State.pdf)

[State.pdf](https://www.hcup-us.ahrq.gov/reports/statbriefs/sb219-Opioid-Hospital-Stays-ED-Visits-by-State.pdf)

World Health Organization. (2013). <http://www.who.int/en/>