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Treatment in a Rural Clinic of the Opioid Overdose

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Abstract

Background: The opioid epidemic in rural New Hampshire requires immediate intervention. Treatment for overdoses of opioids with naloxone (an opioid antagonist) must be quickly administered to prevent a death in the opioid overdosed patient. Two rural New Hampshire clinics did not stock naloxone in their code carts, nor did they have a clinical protocol guiding pre- and post-resuscitation in the case of overdose. *Purpose*: This DNP project introduced naloxone into each clinic code cart as well as providing nurses, nurse practitioners and physicians education on administering naloxone intra nasal atomizer along with a clinical protocol for pre-and post-resuscitation to prevent death from an opioid overdose. *Methods*: Clinic staff members were educated on the use of naloxone pre-and post-resuscitation protocols. An SPSS (version 24) statistical program was used to evaluate changes in clinic staff knowledge pre-and post-education on the care of the opioid overdosed patient. *Results*: Pre- and post-testing of knowledge of clinic staff demonstrated an increase of knowledge from an average pre-testing score of 72% to post-testing of 100% in the thirty-four of the thirty-five participants (with one participant scoring 81%). *Conclusion*: This DNP project developed an education program for nurses, nurse practitioners and physicians that clearly improved confidence, knowledge and skills allowing for accurate diagnosis and treatment of the non-medical use of prescription overdosed patients in two New Hampshire rural clinics This new protocol is reducing deaths from opioid overdose.

Keywords: Heroin, opioids, overdose, epidemic, naloxone.

Introduction and Background

The American Society of Addiction Medicine (ASAM, 2016) reports that, drug overdose is the leading cause of accidental death in the US, with 52, 404 lethal drug overdoses occurring in 2015. Opioid addiction is driving the epidemic, with over 20,101 deaths related to prescription pain relievers and over 12,990 overdose deaths related to heroin (ASAM, 2016). "How do healthcare practitioners translate new knowledge into specific actions that they put into practice is a question worth asking" (White & Dudley-Brown, 2012, p.25, para 2). Most practicing Family Nurse Practitioners have daily schedules filled with patients that are being examined for health screening, routine follow-up care, and for being sicker than expected. This takes time to sort out the acute verses chronic disease process.

Practicing Family Nurse Practitioners spend many hours sifting through laboratory results, other tests, imaging and the patient's symptoms to provide the best possible health care. This leads to the symptom's resolution and or stabilizing the symptoms, thus, preventing death. Without knowledge of current research, promotion and initiation of a standard of care and policy to improve patient outcome, more patients can die. As such, it is necessary to mention White and Dudley-Brown's (2012) perspective, who claims that "the key to this learning and adoption of new knowledge is the use of appropriate implementation strategies" (p.25, para 4).

In the process of presenting its evidence, this DNP project focused on the utilization of theoretical and conceptual frameworks, while suggesting a protocol and intervention that could save lives of the non-medical use of prescription opioids overdose patient who come to the clinic. Previously, naloxone was used in hospital settings for acutely ill patients as part of pain management, such as reversal of conscious sedation effects during procedures like colonoscopy. Naloxone was not used as an outpatient antidote for heroin and opioid overdose.

Individuals ages twelve and older are plagued by addiction and dying unnecessarily. Heroin use has increased among men and women of all ages. Some of the greatest increases are groups previously known for low rates of use such as women, privately insured, and the higher income people (Center for Disease Control and Prevention [CDC], 2016). Between 1999 and 2014, the rate of overdose deaths from opioids more than quadrupled. Overdoses involving opioids killed more than 28, 000 people in 2014 (CDC, 2015). From 2000 to 2015 more than half a million-people died from drug overdoses, 91 Americans die every day from and opioid overdose (CDC, 2015). In addition, the New Hampshire (NH) office for the Chief Medical Examiner reported 439 deaths for the year 2015, which excluded the number of lives saved simply by intervening with naloxone.

The 2016 projected deaths are expected to be greater than 480. In April 2016, the NH Drug Monitoring Initiative (DMI) reported that the largest increase in heroin treatment admissions were from July 2015 to August 2015, recording a 30.5% increase. Moreover, per the same source, from 2013 to 2015, a 127. 6% increase in the number of overdose deaths were registered (NHDMI, 2016). Today, non-medical use of prescription opioids is expanded, reaching epidemic proportions in the state of NH.

Two walk-in-clinics in rural NH did not supply naloxone and did not possess a current protocol to treat patients experiencing an opioid overdose. Until this DNP project was initiated both clinics depended on emergency responders to administer naloxone if needed. The emergency responder time fluctuates; due to time of year, traffic patterns due to influx of tourists, weather, local events and volunteer response team availability (see Appendix A, letter EMS). The clinic staff was capable of pre -and post-resuscitation however, without naloxone availability, death can be imminent. Moreover, the clinics are closer to most of the population

than the hospital emergency department. The number of deaths due to opioid overdose continues to grow in rural NH. This DNP project has promoted education preventing non-medical use of prescription opioids that may result in death.

These two clinics interact with a diverse patient population, including patients who have overdosed and abused prescription opioids and heroin. The nursing and healthcare providers raised concerns on how to administer the opioid antagonist naloxone safely and cost effectively. Also, the fact that there is no existing opioid overdose pre-and post-resuscitation standard of care in these clinics represents an important issue. Relying on only cardio-pulmonary-resuscitation (CPR) is not enough.

The epidemic of opioid deaths in rural NH demands current factual, up to date information be translated quickly to our two rural clinics health care providers and nursing staff. Prompting the initiation of this DNP project, that established an evidence based knowledge of emergent treatment. Thus reducing deaths from opioid overdose that required quick assessment and intervention from nursing, nurse practitioners and physicians. New Hampshire newspapers, TV stations, and the NH Division of Public Health Services reported on December 7, 2015 that of the number of related overdose deaths in 2014 were caused by opioids (NHDPHS, 2015). The Concord Monitor reported that 2016 drug deaths in NH surpassed the 2015 record (Nilsen, 2016 a).

The NH Drug Monitoring Initiative Report of 2016 predicted greater than 500 deaths as a result of opioid overdose. This translates one person dying from a drug overdose every day in New Hampshire (NHDMI, 2016). The epidemic of overdoses and deaths associated with abuse of non-medical use of prescription opioids and heroin is devastating. Until recently, most by-standers and loved ones could only stand by and wait for emergency responders to arrive and

hopefully resuscitate the overdosed victim, as in rural New Hampshire, some towns and counties rely on volunteer emergency responders. In rural NH, the local sheriff office, and local police departments do not carry naloxone in emergency kits. This can delay the emergency response time and lead to the victim's death (see Appendix A). Under present conditions, the two clinics are highly exposed to risks. Nurses, nurse practitioners and physicians needed to acquire a standard of care that initiated proper treatment and can effectively utilize life-saving interventions for the person experiencing an opioid overdose.

Need for a Protocol for Treatment and Naloxone

Nurses and healthcare providers needed a standard of care that did through academic training initiate proper treatment and would utilize effective life-saving interventions for the person overdosing. As mentioned previously, two clinics in rural New Hampshire until the initiation of this DNP project did not stock naloxone, and had no pre -and post-resuscitation protocol for the potential overdosed patient. Both facilities have family practice providers that treat a large population of chronic and acute pain as well as dispense opioid prescriptions. Although healthcare providers are decreasing opioid prescriptive habits, the potential for a person abusing opioids to, present at one of the clinics exists. NHDMI (2016) reported that, not all physicians are willing to treat addiction with suboxone that reduces the craving for opioids, patients remain at high risk of overdosing and dying.

Suboxone is prescribed by a licensed physician trained and certified to dispense the medication. Suboxone allows the opioid addicted individual to experience the least amount of withdrawal symptoms. Surprisingly, NHDMI (2016) reports that suboxone is prescribed by a few physicians in the state of NH, while an estimated 10,000 people in NH, might benefit from the treatment have no legal way to obtain the drug. According to the NHDMI (2016), NH providers

are some the nation's most prolific prescribers of highly addictive painkillers, driving the state's drug crisis. In 2015, over a three-month period, patients in NH filled nearly 200 thousand prescriptions for oxycodone and other opioids, totaling some 12 million doses representing more than 9 doses for every man, woman and child in NH.

Organizational "Gap" Analysis of Project Site

The organizational gap analysis of this project included establishing a schedule and time line to implement this DNP project over three months in two rural New Hampshire clinics. Understanding the relationship of the non-medical use of prescription overdose patients, provider intervention and need to establish a reasonable clinic protocol providing nurses, nurse practitioners and physicians with the evidence based knowledge, skill set, and equipment to save lives were voiced by staffing and the community. Supplying the two-clinic code carts with naloxone intra nasal atomizer and knowing how to dispense it properly when needed had to occur in order to properly care for the opioid overdosed patient. Establishing a DNP project that implemented quality improvement reducing the risk of deaths associated with the daily epidemic non-medical use of prescription opioids overdose is a desired outcome of both rural clinics. As already discussed in the introduction section of this paper, a gap in care existed. This DNP project was centered on making change by improving nurses, nurse practitioner and physician's confidence, knowledge and skill set caring for a population of patients at risk for untimely death.

Problem Statement

Patients presenting to the two rural clinics with non-medical use of prescription opioid overdose symptoms are at risk for death. The two clinics in discussion did not possess the requirements to prevent death from overdose of non-medical use of prescription opioids. Training nurses and healthcare providers to quickly assess the overdose patient and initiate pre-

resuscitation care along with administering naloxone intra nasal to revive the overdosed patient could save lives. Opioid overdose and recognizing opioid overdose is further discussed on page twenty-six of this DNP document. Post resuscitation that involves stabilizing the patient and transporting the patient to the nearest emergency department for post overdose of non-medical prescription opioids care can improve overall outcome. This DNP project has provided nurses, nurse practitioners and physicians with the knowledge and skills to utilize available equipment needed to reduce death from non-medical use of prescription opioids overdose in a rural clinic. Utilizing the NH (2015, 2.15A and 2.15P) emergency responder's algorithm for pre-and post-resuscitation of an overdosed patient as well as use of naloxone intra nasal administration, has saved lives.

Literature Review

A comprehensive literature review was conducted to identify and critique interventions related to non-medical use of prescription opioids, the present paper utilized the following search engines and databases: CINAHL, PubMed, Google Scholar, and CDC web sites. Key terms utilized were opioid overdose, opioid pain management abuse, emergent treatment of the opioid overdose patient, naloxone (Narcan) intervention, and epidemic. Articles where explored for the best treatment options caring for an opioid overdose patient. Additionally, the materials included in the research are dated from 2009 through March 2016 that included all adolescents age twelve and older. The exclusion criteria included individuals younger than twelve and patients who were prescribed opioids for pain related to cancer progression; cancer produces pain at multiple levels, requiring fluctuating pain dosing that can exceed the standard dosing of a non-terminal patient.

As the non-medical use of prescription opioids epidemic continues to evolve, this author found it is necessary to include studies dedicated to opioid prescriptive habits illustrating the

magnitude of the problem. Understanding non-medical use of prescription opioids abuse may initiate changes, which can lead to alternative pain control methods and fewer deaths. During this process, the author retrieved forty articles from the search engine of which twenty-eight were included in this literature review. As resulted from the scholarly and other articles related to opioid and heroin overdose reviewed, it is evident that an epidemic of abuse and deaths is occurring. The review tries to open an understanding towards what initiated and promoted the growing epidemic of the non-medical use of prescription opioids.

During this research, many articles and guidelines were explored, including the recommended intervention by emergency responder's protocol; that is the State of New Hampshire Patient Care Protocol (2015, 2.15A and 2.15P) for abuse/overdose. This involves pre- and post-resuscitation interventions of the non-medical use of prescription opioids overdosed patient, including naloxone administration.

The Agency for Healthcare Research Quality (AHRQ) guideline summary is as follows. Community management of opioid overdose (WHO, 2014) objective was designed to reduce the number of deaths from opioid overdose by providing evidence-based recommendations on the availability of naloxone for people exposed to this epidemic, along with pre-and post-resuscitation care of the opioid overdose patients in the community. Nilsen (2016b) claims that NH ranks third-highest per-capita in drug deaths nationwide, falling behind only West Virginia and New Mexico. Because of this escalating epidemic the Board of Nursing from NH initiated and adopted emergency rules for opioid prescribing on 18th December 2015 (NHBON, 2015).

Prescriber Habit and Increased Death

Non-medical use of prescription opioid overdose deaths is a complex issue resulting in negative consequences, death. A large study involving U.S. Veterans given prescriptions for

opioids and benzodiazepines together were investigated. The department of US Veterans tracked over a six-year period from 2004-2009 finding a substantial increase in opioid and benzodiazepine deaths. The author found an indication that provider's prescriber patterns where responsible for an increased risk of deaths. The study did not include the interventions utilized by the U.S. Veterans except to establish that prescriber's prescriptive patterns needed to change to reduce the increased of risk of death when prescribing opioids to patients (Park, Saitz, Ganoczy & Bohnert, 2015). Opioid prescriptions in the United States increased over the last twenty-five years from 76 million in 1991 to nearly 207 million in 2013 (Hawk, Vaca & D'Onofrio, 2015). Studies indicated that physicians poorly managed patients' pain. Aggressive pharmaceutical marketing practices and promotion of affordable opioid pain medications added to the non-medical use of prescription opioids epidemic climate. Hawk et al. (2015) also noted that with increased attention to pain as the 'fifth vital sign' and professional society guidelines based on risk-benefit analysis by expert consensus rather than high quality research studies, many health care providers embraced chronic-opioid therapy management of non-malignant chronic pain.

Naloxone Treatment

In 2014, the community management of opioid overdose guideline was reviewed by the World Health Organization (WHO). This guideline reviews and interprets recommendations related to using an intervention for an opioid overdose victim. It defined the use of naloxone, and need for implementing it, while pre-and post-resuscitation were identified in the care of a person receiving naloxone. Post care was also, reviewed and established as a need to prevent further death from opioid overdose. Opioids are cheap, accessible, and abuse can be reached easily. As mentioned, the rates of opioids overdose have reached epidemic proportions, calling for a quick medical response, to prevent death.

Stephens and Tanabar (2015) found that adequate pre-hospital care hinges on aggressive airway control. The next intervention is utilizing naloxone either intra muscular (IM) or intra venous (IV) or intranasal (IN). IN route, of naloxone administration is of a similar effect to the IM route as a first line treatment for isolated opioid overdose in the pre-hospital setting (Stephens & Tanabar, 2015). A need for nurses and healthcare providers in the clinic is to achieve a better understanding of the necessity of being prepared and properly trained in case of a non-medical use of prescription opioid overdose patient, is important. Although few guidelines regarding this procedure were established, many studies and research became available, claiming that quick intervention is the key to saving lives when applying an overdose standard of care.

A skid row area study in Los Angeles, CA measured outcome intervention of the overdose individuals with naloxone. This research September 2006 through 2008 involved training first responders, individuals with substance use disorders, and others likely to witness and overdose utilizing naloxone as well as pre-and post-resuscitation. At the end of the study it was concluded that overdose prevention and response training programs may be associated with improved overdose response behavior, with few adverse consequences and some unforeseen benefits, such as reduction in personal drug use (Wagner et al., 2009).

The NH Medical Examiner reported that in 2013 a total of 193 deaths from drug overdose, 70 of these deaths were from heroin and 18 from fentanyl-a strong opioid. In 2014, the total drug overdoses climbed to 326 of which 293 involved a combination mix of heroin and non-medical use of prescriptive opioids, 439 deaths from a combination mix of heroin and non-medical use of prescription opioids use in 2015. The Mayor for Manchester, NH had requested that the Governor of NH Maggie Hanson declare a state of emergency due to the opioid epidemic (WMUR 9, 2016).

As of March 2017, deaths associated with opioids and non-medical use of prescription opioid overdose in Manchester, NH alone is 70 with emergency responders treating 268 overdoses. One victim was less than 15 years of age, while another at age 70. Several of the treated had repeated treatment with naloxone two to five times (WMUR 9, 2016). Manchester police and NH State Police are continuously frustrated as deaths accumulate due to the combination of heroin and non-medical use of prescription opioid overdoses. The deaths in NH correlate with the Center for Disease Control (CDC, 2016). The CDC reported that drug overdose was a number one cause of injury-related death in the United States with 43, 982 deaths documented in 2013 (CDC, 2015). The National Institute on Drug Abuse, and American Society of Addiction Medicine released documentation in 2016, noting the impact on special populations in ages 12-17. In 2014, 467 thousand adolescents were current nonmedical users of pain relievers with 168 thousand having an addiction to prescription pain relievers (NIDA, 2016). This same study reported during 2014 an estimated 28 thousand adolescents had used heroin in the past year, and an estimated 16 thousand were current users of heroin (NIDA, 2016). The combination of heroin and non-medical use of prescription opioids related overdose deaths continue to sky rocket in the state of NH prompting a public outcry.

Legislature of New Hampshire

The New Hampshire legislature passed a bill: NH HB 271 (2015) 157 (see Appendix B the legislation). This bill allows, health care professionals to prescribe opioid antagonist (naloxone intra nasal e-kits) to a person experiencing an opioid related overdose or a family member, friend, or another person able to assist a person at risk of experiencing an opioid overdose (NH, 2015). The changes in legislation and public outcry have made an impact on the clinics in rural NH. This author is stationed at two different NH rural clinics; one clinic has

emergency responder arrival time within minutes while the other clinic depends on a volunteer member emergency responder arrival that can take twenty minutes and longer. This DNP project involved utilization of naloxone in the two clinics in rural NH and healthcare provider education allowing effective treatment of the opioid overdose patient that is brought to the clinic by a friend or family member. Currently, now both clinics do stock naloxone in their code carts.

Code Cart

A code cart is a set of trays/drawers/shelves on wheels used in hospitals, urgent care clinics for transportation and dispensing of emergency medication/equipment at the site of a medical, surgical, cardiac, opioid overdose emergencies along with life support protocols to potentially save someone's life. A recent article acknowledged the importance of lay person access to naloxone (Calas, Wilkin & Oliphant, 2016).

Lay persons receiving kits (naloxone emergency kits) numbered 152, 283 was reported while 26, 463 opioid overdosed victims had received naloxone intervention (Calas, et al., 2016). Naloxone is an opioid antagonist used to reverse the effects of an opioid overdose (Calas, et al., 2016). The importance of naloxone availability and route used is important. Sabzgabaee, Eizadi-Mood, Yaraghi and Zandifar (2011) in a controlled hospital emergency environment, found naloxone reduced opioid and heroin overdose deaths. When the antagonist naloxone was given subcutaneous (SQ), intramuscular (IM) injections or intravenous (IV) to the opioid overdose person, they reacted with significant agitation (Sabzgabaee, et al., 2011) only 12 of the individuals that received IV naloxone became agitated. This agitation can produce brute physical energy injuring the professional healthcare team and the victim. When naloxone intra nasal (IN) was used, the study demonstrated no agitation from the adversary and better safe results resuscitating the overdose victim and fewer deaths resulted (Sabzgabaee, et al., 2011).

This is important for the rural clinic that is least likely to have emergency responder time quickly. The clinics in rural areas are closer than most hospital emergency departments. Treating the opioid overdosed patient in a clinic in a rural area has many challenges. The first challenge is to be prepared to accurately assess and treat the opioid overdosed patient. Nursing is in a unique position to promote, treat and prevent an opioid overdose. Nurses are encouraged to become active in the prevention of opioid-related overdoses and to incorporate overdose prevention into their daily practice (Clark, 2014). Nurses are one of the first to respond to the symptoms of opioid overdosing in a clinic setting.

Developing a nursing evidence based interventional protocol has empowered nursing action that can save lives. Clark (2014) indicated that overdose prevention should be incorporated in every day practice. This DNP project did initiate a protocol and intervention administering naloxone, pre-and post-resuscitation to an overdosed patient seeking treatment at the clinic emergently, preventing death. With the physician, nurse practitioner and nurse's learned knowledge, successful intervention and redirection of this patient, during the post-resuscitation phase can be guided to additional detox care, leading to a possible resolution of his/her addiction.

Opioid Prescription Abuse

Other research reviewed included the need for health care providers to change prescription writing habits. A survey in December noted prescriptions rose 76 million in 1991, 219 million in 2011, and 201 million in 2013 (Anderson, 2015). A nonfatal opioid overdose study by Optum National Commercial Insurance company found 2, 848 individuals aged 18 – 64 years who suffered a non-fatal opioid overdose while taking opioids for chronic non-cancer pain (Brooks, 2015). In addition, 91 % of those patients (2, 597) received one or more opioid

prescriptions in the follow up period after the overdose-median, 299 days (Brooks, 2015). Rural Walk in Clinics must be prepared to treat an opioid overdosed patient preventing death. A recent article in the Nurse Practitioner journal found that chronic pain afflicts at least 100 million adults in the US, which translates to about one in two adults in the entire population (Kawi, 2016). This prevalence is greater than the combined total of adults affected by heart disease, cancer, and diabetes (Kawi, 2016). Making sure chronic pain control does not lead to diversion, abuse, or even death is difficult and requires providers to offer and insist on close follow up care of the patient. As well as promoting changing prescriptive habits of healthcare professionals will decrease opioid overdoses and deaths.

If a health care provider does not monitor a patient on opioids closely, the provider can lose their US Drug Enforcement Agency (DEA) certification (Sheppard & Hale, 2016). Nurse Practitioner Whitford found herself investigated by the DEA and the Board of Nursing because of prescriptive practices of pain medications (Sheppard & Hale, 2016). She was investigated because her practice although 80% of it was primary care also, it consisted of 20% pain management activities. Sheppard and Hale (2016) demonstrated the importance of balancing pain management concerns of patients and legal issues faced by nurse practitioners. Nurse Practitioners are health care providers who examine patients regularly requesting pain intervention.

These facts add to the importance of monitoring patients on opioids closely and to be able to intervene if abuse and overdose occurs. Along with treating, saving the life of the opioid overdosed victim, we as healthcare providers must redirect how a patient is managed for pain and provide alternative safer methods. Once this is done the need for follow-up care and detox must be addressed. More studies are needed. As Nurse Practitioners, the responsibility to treat

pain effectively should also include the legal right to provide our patients who have become addicted accidently or intentionally to opioid medications, with the drug Suboxone, methadone or vivitrol and manage their withdrawal of addiction. At this time, Nurse Practitioners must rely on physicians licensed to dispense suboxone to initiate and care for our patients. Research continues to assess the best treatment options available needed to treat the opioid addicted patient. Nurse Practitioners continue to work with the NH State Board of Nursing for authorization privileges to prescribe the medication suboxone.

Evidence Based Practice Model

The purpose of this quality indicator Plan Do Act Study (PDSA) model initiated a DNP project that has improved quick assessment of an overdose patient. The quality indicator was used in improving nursing, nurse practitioners and physician knowledge dispensing naloxone intra nasal to non-medical use of prescription opioid overdosed patients in two rural clinics. Nurses, nurse practitioners and physicians now follow the State of New Hampshire Patient Care Protocol for abuse/overdose (2015, 2.15A and 2.15P). Nursing, nurse practitioners, and physicians have been trained to administer naloxone intranasal spray to the overdosed non-medical use of prescription opioid patient as needed in the two rural clinics.

The PDSA model incorporated four stages putting a planned change into effect. Plan is the change and observation stage. This change and observation included an educational power point review, mock codes demonstrating change in knowledge and assessment skills of nursing, nurse practitioners and physicians. Resulting in the timely, accurate diagnosis of the non-medical use of prescription opioid patient.

The Do stage involved implementing the trying portion of this model with informal one on one educational review of the State of New Hampshire Patient Care protocol along with

demonstration use of a "dummy" naloxone intranasal spray atomizer. During stages Plan and Do the pre-written test had been administered to the thirty-five-participating nurse, nurse practitioners and physicians. During Study phase of this DNP project assessing accuracy and use of naloxone intranasal spray atomizer, pre-resuscitation and post-resuscitation protocols for the non-medical use of prescriptions opioids has been periodically reviewed. The post-written test was administered to the thirty-five participants and analyzed. In the final step, the researcher continued to monitor naloxone intranasal atomizer spray use, pre-and post-resuscitation protocol of the non-medical use of prescription opioids in both clinics. During the Act phase, any refinements had been reviewed and adjusted as needed; although none have been made at this time. The researcher plans to update the two clinics pre-and post-resuscitation protocols yearly.

Project Site and Sample

This DNP project took place in two rural New Hampshire clinics involving thirty- five participants that improved emergent treatment of the opioid overdosed patient that reduced a gap in nursing, nurse practitioner, physician knowledge to quickly assess the opioid overdosed patient to prevent death. Inclusion criteria included all nurses, nurse practitioners and physicians working in clinic 1 and clinic 2 that agreed to participate in the DNP project. Utilizing a pre-and post-written test, monitored demonstration, use, and administration of naloxone intra nasal atomizer training, and pre-and post-resuscitation standard of care to patients presenting with opioid overdose symptoms. Exclusion criteria were patients who are unresponsive in respiratory failure without a known pulse, greater than fifteen minutes.

Twenty nurses, ten nurse practitioners and five physicians employed at the two clinics walk in care centers participated in the training. All participants had Basic Life Support (BLS) and Advance Cardiac Life Support (ACLS) certifications that were up to date. Everyone received

pre-and post-written tests, each test had no identification and were placed in envelopes marked pre-and post-written tests and locked in this student DNP file cabinet with no other access key. The pre-written test overall average is eight correct answers equaling 72 %. The most difficult questions pre-test were questions 8 and 11. Question 8 dealt with dosing of naloxone absorption, incorrectly answered by twenty participants. Question 11 reviewed the duration of naloxone once administered; ten participants did not answer the question correctly clearly demonstrating need to review naloxone use, administration and effectiveness. The post-written test overall average was eleven correct answers 99% with one 81% or nine correct questions.

Theoretical Framework

Putting theory into practice: Six Steps to success, the Iowa Model and the Rosswurm and Larrabee Model is used to implement change (Rosswurm, & Larrabee, 1999). This is a six-step model to facilitate needed change. Rosswurm and Larrabee change theory has six distinct stages that are; assessing the need for change in practice, locate the best evidence, critically analyze the evidence, design practice change, implement and evaluate change in practice, and integrate and maintain change in practice. This DNP project required adapting and initiating a new protocol for providers and nursing knowledge to administer nasal naloxone in the clinic. A standard of care protocol administering pre-and post-resuscitation to the opioid overdose patient will improve patient care and prevent deaths.

Steps in model realization

Step one of the six-step model consisted of identifying that currently the two rural clinics in New Hampshire did not stock naloxone intra nasal and nurses, nurse practitioners and physicians working with patients rely on emergency medical service (EMS) response. The EMS response has lengthened at times especially in the tourist season. Nurses, nurse practitioners, and

physicians raised concern that naloxone intra nasal was not available in the two-rural clinic code carts. As well as lack of knowledge how to administer the naloxone intra nasal was voiced. No pre-and post-resuscitation protocol was available for review or reference to care for an opioid overdose patient.

Step two in this change prompted identification of available standard of care protocols for nurses, nurse practitioners and physicians to administer intranasal naloxone. This process included reviewing current literature, the appropriate and best protocols available that would meet a standard of care saving lives during pre-and post-resuscitation of the opioid overdose patient. Reviewing the problem interventions and outcomes; engaging staff and providers promoting change in caring for the opioid overdose patient. The nurse, nurse practitioner and physician bias toward addiction needed to change. Understanding the obligation to be prepared, reinforcing prompt treatment to an opioid overdose patient coming to the rural clinic meant saving lives.

Step three of this process involved review of the protocols available and critically assess this information. This included feasibility-use, benefits to the staff as well as patient, implementing the new protocols. During this process, a pre-and post-written test was developed to demonstrate and promote evidence based knowledge for administering naloxone intra nasal, recognizing opioid overdose symptoms, in order to act quickly and accurately to a presenting opioid overdosed patient. Recognizing the need for change and the process to make change was enthusiastically recognized by the nurses, nurse practitioners and physicians.

Step four defined the proposed change, review of identifying resources, promotion of the capstone project that included presenting to nurses, nurse practitioners and physician's information related to the timing that included scheduling of power point program, mock codes,

and written tests of this capstone project. During this time nurses, nurse practitioners and physicians had an opportunity to discuss concerns prompting open communication with the DNP student. Similarly, during open communication, a transformation of biased attitudes became empathetic and a need to promote the best treatment available was continuously voiced by the nurses, nurse practitioners and physicians throughout this capstone project.

Step five included implementations of the three-month DNP project that resulted in change in practice. The evaluation of the pre-and post-written tests, costs of the program including nurses, nurse practitioner and physician time, cost of posters, pamphlets and intra nasal naloxone for two code carts and four "dummy' naloxone intra nasal atomizers for demonstration with staffing during mock codes.

Step six integrated a positive change in the rural clinics in New Hampshire. Nurses, nurse practitioners and physicians through the pre-and post-written testing demonstrated a significant change in knowledge and confidence administering naloxone intra nasal opioid antagonist, pre- and post-resuscitation to an overdosed opioid patient. Step six included review of all findings to the administrators-stakeholders as well as all staff participating in the DNP project.

Goals, Objectives, and Outcomes

This DNP project was a convenience sample of clinic staff utilizing quantitative one-group pre-test/ post-test design establishing the benefits of a specific healthcare intervention (see Appendix C clinical naloxone training protocol) implemented week one through four consecutively for three months. Goals and objectives utilized and involved one: Development of a protocol for opioid overdose patients will increase nurses, nurse practitioners and physician knowledge needed to perform the necessary intervention to treat quickly and appropriately. Two: Provide availability of naloxone in two rural clinics code carts. Three: Implementation and

instruction, proper administering of naloxone, utilization of a pre-resuscitation and post resuscitation clinical protocol, so that the nurses, nurse practitioners and physicians can decrease risk of deaths associated with opioid abuse. The ultimate outcome of this DNP project was to provide evidence based knowledge, education and training that would decrease risk of deaths to patients who abuse opioids leading to overdose and death.

Evidence of Stakeholder Support

Permission to initiate this quality DNP project was granted by the governing administrative department of the two rural clinics in New Hampshire (see Appendix D permission). This educational DNP project provided nursing, nurse practitioners and physicians with the tools necessary to quickly treat an opioid overdosed patient and prevent death.

Protection of Human Subjects and Ethics

Patient confidentiality was protected by the Health Insurance Portability and Accountability Act (HIPAA) as well as The Confidentiality of Alcohol and Drug Abuse Patient Records Regulation privacy acts. An Institutional Review Board (IRB) form was compiled and submitted to the University of Massachusetts-Amherst. A determination of Human Subjects form was submitted to UMass-Amherst and a waiver was obtained. The IRB process was reviewed by the University of Massachusetts-Amherst and waived (see Appendix E confirmation letter).

When preparing this DNP project each nurse and health care provider was asked to review and voluntarily sign a human subject's protection waiver prior to initiation of the research (see Appendix F consent). This DNP project did include a pretest and posttest written tests to assess nurses and healthcare provider's knowledge (see Appendix G pre-post written tests), how to administer naloxone and initiate pre-and post-resuscitation protocol if an opioid overdose patient presents at either rural New Hampshire clinics. No identifying name was assigned to the

written pretest or posttest, educational demonstrations of naloxone and the pre- and post-resuscitation protocol implementation utilization of all educational tools during hands/on educational/demonstrational sessions. All nurses, nurse practitioners and physician's human rights have been protected.

Anonymity of the highest degree was observed where each participant was assigned a code, written pretests and posttests were coded and not identifiable by name. All materials were kept in a locked and secure file in the researcher's office. Consent forms were not stored with the pre-test and post-test. Only the researcher and university research team members had access to evaluations. Information from this project has been presented in summary format and they will not be identified in any publications and presentations. All participants were informed (full disclosure) prior to participation in this DNP project, they were given an opportunity to ask questions, as to what was involved in the educational DNP project, the right not to participate, the right to withdraw from the project training and withhold information from this project at any time.

Clinic Standard of Care

This DNP project is designed to save the life of opioid overdosed individuals. Use of naloxone, pre-and post-resuscitation has been offered to our nurses, nurse practitioners and physicians working at clinic 1 and clinic 2. In addition, special public educational offerings at both clinics will be provided for non-clinic physicians, nurse practitioners, nurses, support staffing, family members, friends of those with known addiction, and the public. The added educational offerings will be presented by professionals involved in the treatment and care of the addicted. Understanding opioid overdose and recognizing the symptoms of an opioid overdose can reduce death.

Opioid Overdose

An overdose occurs when the body has more drugs in its system than it can handle, resulting in potentially life threatening changes. The body metabolizes opioid overdosing which affects how we breathe. Decreased ability to breathe causes a lack of oxygen and increased risk for dying. An opioid overdose impacts breathing and slowly the individual stops breathing. (the amount of opioid taken does affect how long it lasts in the body). Respiratory depression is reversible until death occurs, this can take one to three hours and can be reversed with naloxone, which displaces opioids from the opioid receptor and blocks the binding of additional opioids for thirty to ninety minutes. It has been documented that CPR alone is not enough to reverse an opioid overdose.

Recognizing Opioid Overdose

The effects of a non-medical prescription opioid overdose are threefold. Often the individual is unconscious or has reduced consciousness; shows pinpoint pupils, and suffer respiratory depression. If an opioid overdose is not treated, a person will stop breathing, go into cardiac arrest and die. An opioid overdose is a dire medical emergency. A table describing symptoms of being opioid high and opioid overdosed is presented in the supplementary documents (see Appendix H opioid symptoms).

Cost Benefit Analysis

This DNP project utilized life saving measures. Multiple studies defined the dollar amount for caring for an individual that has overdosed on opioids can run in the tens of thousands of dollars. The time involved in court, lost wages as well as incarceration, treatment remains costly to the opioid addicted patient, his or her family and employers. Birnbaum et al, (2011) found evidence that prescription opioid abuse is an increasing and substantial burden on

society as a whole. “Criminal justice costs contributed approximately $5.1 billion, or 9.2% of the total societal costs, of which correctional facilities accounted for the largest share with $2.3 billion (44.1%)” (Birnbaum, et al., 2011). Often the opioid addicted patient cannot work, becomes a dependent of the state as well as any dependent children. As this epidemic grows so do the financial burden to properly care for this patient and his or her family. In-patient detox centers are few and have long waiting lists and often not covered by health insurance. New Hampshire economy lost 1.85 billion due to substance abuse in 2012 (McDermott, 2014). As the number of near miss and fatal opioid overdose increases, so will the cost to treat these individuals and the families left behind.

Resources

Three thousand dollars was allotted by the budget committee of the practice and voted on by owners and partners of this clinic to implement lifesaving education, demonstration and use of opioid overdose protocol for the two rural clinics in New Hampshire (see Appendix I budget). This DNP project utilized the entire budget during this three-month training period. Nurses, nurse practitioners and physician’s hourly distribution of funds totaled $2,500.00. Opioid overdose wall posters for two clinics printing expenditure was $100.00. Lamination of the opioid pre- and post-resuscitation (NH, 2015, 2.15A and 2.15P) protocol was placed in the two code carts for easy review when needed, totaled $100.00. $200.00 paid to medical supply house for naloxone intra nasal for two code carts and four “dummy” naloxone intra nasal atomizers for training demonstration. An additional out of pocket expense of $ 67.00 for printing pamphlets- How to Avoid Overdose (See Appendix J rescue breathing pamphlet) for both rural clinic waiting rooms accrued by this DNP project trainer.

Methods

A pre-test was administered followed by observational nursing, nurse practitioners and physician's demonstration and use of naloxone intra nasal administration. Initiation of pre-and pose-resuscitation care during mock codes, is intended to build participants level of knowledge, confidence and satisfaction caring for an opioid overdosed patient had been reviewed as well as a post-written test. Education of Clinic Staff December 2016: An all staff meeting was assembled to invite all nurses, nurse practitioners and physicians employed in the two clinics to participate in an all staff meeting that included the following, a power point program demonstrating the need to be prepared to care for an opioid overdose patient. This educational program identified the New Hampshire current epidemic crisis and need to accurately identify and treat the opioid overdose patient, preventing death.

Project Design

A pretest was administered to participating nursing, nurse practitioners at the clinic to evaluate knowledge of Naloxone use and a post test was administered after to evaluate the effectiveness of this educational intervention. This post-test was given to the same nurses, nurse practitioners and physicians to evaluate if after receiving education through a power point education program, mock codes, one on one administration demonstration of naloxone intra nasal opioid antagonist was changed. This DNP project was designed to address and change nursing, nurse practitioners, and physicians care for an opioid overdose patient.

After the implementation of nursing and healthcare provider education, a pre-and post-resuscitation protocol for opioid overdose patient has been added to both clinics. This has been placed in laminated format at the site of both Code Carts for immediate retrieval as needed. Included is the recommended naloxone dosing enabling nursing and healthcare providers

evidence based protocols-State of New Hampshire Patient Care Protocol (2015 section 2.15 A and 2.15 P) to intervene and save lives. Each code cart has a standard supply of naloxone intra nasal 2mg/2ml Leur-lock prefilled disposable syringe (instruction included) (Epocrates Rx., 2017) to use as needed for the opioid overdosed patient, to prevent death.

Training of nurses and healthcare providers starting December 2016, included:

- Week one: pretest, review of naloxone administration for the opioid overdose patient clinic protocol.
- Week two: nursing and healthcare provider demonstration of naloxone administration and opioid overdose clinic protocol (mock code scenario).
- Week three: review of nursing and healthcare provider concerns, critique using naloxone and opioid overdose protocol.
- Week four: posttest. Make changes if needed. Repeat for a total of 3 months until all clinic nurses and healthcare providers are trained in naloxone and opioid overdose protocol use.

Setting

This DNP project took place in two clinics in rural New Hampshire. The nursing staff and providers care for a diverse group of patients from chronic to acute care. At any time, a patient who is unresponsive from an opioid overdose crisis may present at both clinics requiring quick assessment and treatment. Some patients in an opioid overdose come to the clinics either, brought by friends or family members. The clinics' nursing staff is often the first to assess an overdose patient. Quick intervention by nursing staff and providers is crucial to saving lives. Until recently the cost of stocking medications with a short shelf life could be expensive. Research has proven that naloxone is necessary to revive an opioid overdose patient along with

pre- and post-resuscitation. The explosion in opioid overdoses has increased public as well as nursing and provider awareness. Nurses and providers want to prevent death while providing crucial pre-and post-resuscitation care.

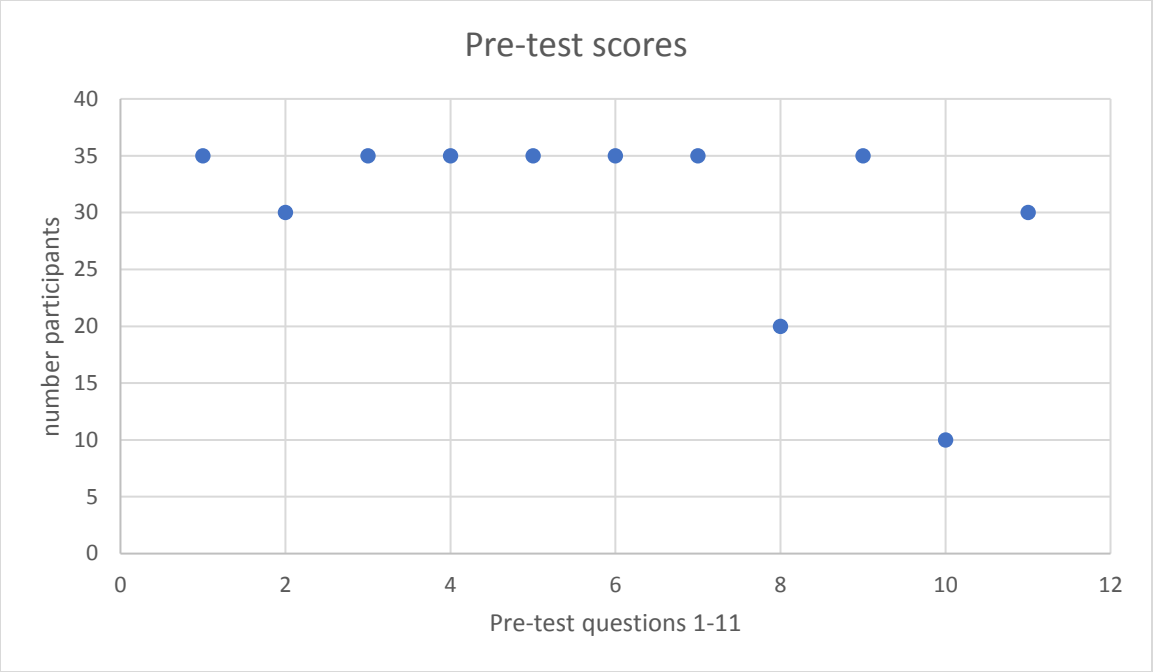
Results

Educational seminars and training in both clinics were provided by the DNP student who is a nurse practitioner who is a licensed provider in the state of NH promoting quality nursing competency within her nursing scope of practice. Allowing utilization of the best evidence based research available to maintain quality healthcare to our overdosed patients in our care. This has taken place over a three-month period at both clinics, December 2016 through February 2017.

A IBM SPSS 24 statistical t test and mean statistical evaluation of the program was utilized to define the significance of the nurses, nurse practitioners and physician's knowledge post-written test and training to care effectively of the opioid overdose patient. Average percentage pre-testing was 72% and post-testing was 100% for thirty-four of the thirty-five participants with one participant (81%). A Mean test was performed as reviewed in this section, paired samples correlations and paired samples statistics formulations tables are as follows.

Figure 1: Scatter Plot of Pre-test Scores

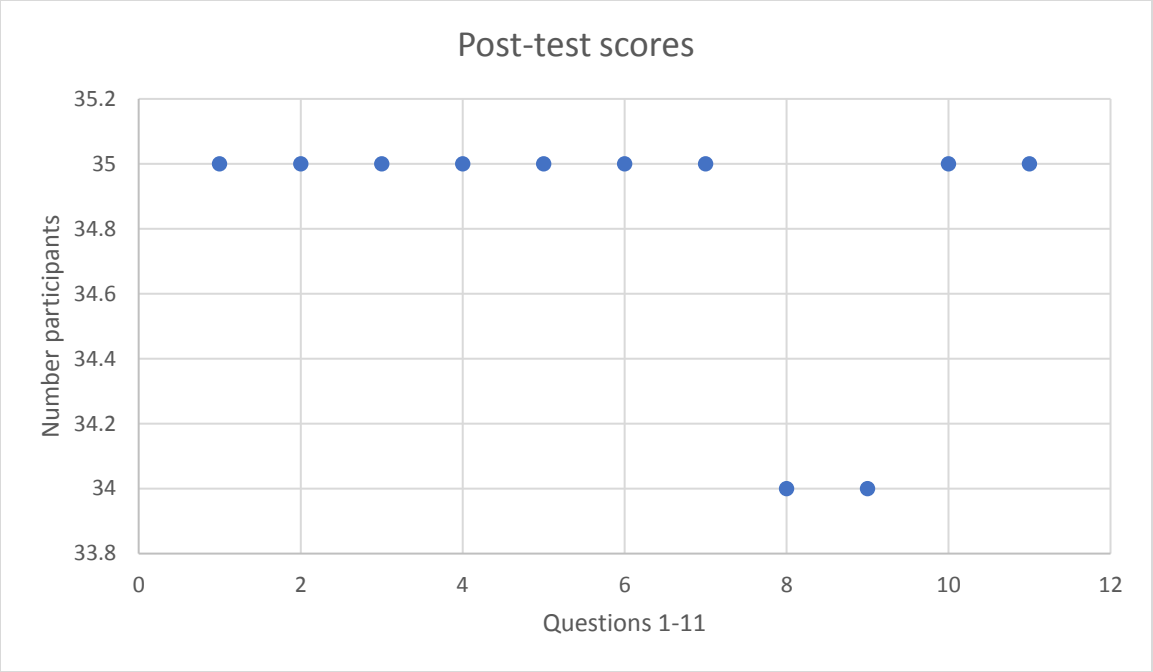
Number of Participants (35) Who Completed the (11 question) Written Pre-Test



The pre-written test results scatter plot revealed questions pictured above starting with question 10 demonstrated, ten of the thirty-five participants did answer question 10 correctly. Next is question 11 noting thirty of the thirty-five participants responding correctly. Questions 1, 3, 4, 5, 6, 7 and 9 all thirty-five participants responded correctly. Question 2 demonstrated thirty of the thirty-five participants answered correctly. And question 8, twenty of the thirty-five participants answered this question correctly. Questions can be reviewed in Appendix G see pre-post test questions.

Figure 2: Scatter Plot of Post-test Scores

Number of Participants (35) Who Completed the (11 question) Written Post-Test



The post-written test overall average was eleven correct answers equaling 100% for the thirty-four of thirty-five participants with one participant demonstrating incorrect answers for question 8 and 9 (81% score).

The Scatter Plots Figure 1 and 2: pre-and post-testing demonstrate notable variations in scoring of the 35 participants (nurses, nurse practitioners and physicians) employed at two rural health clinics: pre-written and post-written test. Testing utilized in this DNP project demonstrated evidence based knowledge pre-and post-demonstration of naloxone intra nasal administration and pre-and post-resuscitation of the opioid overdose patient.

Table 1: Mean Testing Pre-and Post-test.

N=11	Pre-test	Post-test
Mean	8.20200	0.40452

N= 11 for number questions each participant answered. Pre-test descriptive measures (mean) was measured for pre-and post-testing questions using the SPSS format resulting in a high of 8.20200 and post-test mean low of 0.40452. This is a significant improvement in participant

scoring pre-and post-written testing as demonstrated visually in Figure 1 and Figure 2.

Table 2. Paired Sample Statistics.

Pair 1	Written Test	Mean	N	Std. Deviation	Std. Error Mean
	Pre-Test	30.4545	11	8.20200	2.47299
	Post-Test	34.8182	11	0.40452	0.12197

Table 3. Paired Samples Test

		Mean	SD	SEM	Lower	Upper	t	df	Sig 2T
Paired 1	Pre-post	-4.3636	8.1396	2.4542	-9.8319	1.1046	-1.778	10	0.106

(SD=Std. Deviation, SEM=Std. Error Mean, 95% CI of Difference, Sig 2 tailed).

Table 2 and 3: paired-t differences had a notably significant difference in the scores for pre-written test (M=30.4, SD=8.2) and post-written testing (M=34.8, SD=0.40) conditions t (10) =-1.77, p=0.106. These results suggested that the post-written test taken by nurses, nurse practitioners and physicians was higher. The pre- and post-written testing utilized in this DNP project demonstrated notable changes that demonstrated effective change in learned knowledge caring for non-medical use of prescription opioid overdose patients.

Conclusion

This DNP project demonstrated a need for change in the way nurses and physicians handled opioid overdose patients. This project took place in two rural walk in clinics. Translating evidence based knowledge increased understanding by nursing, nurse practitioners and physicians the ability to administer opioid overdose patient treatment accurately, timely, and proficiently, thereby preventing death.

The major epidemic in rural New Hampshire continues to explode daily. You can turn on the TV, read the newspaper, listen to the radio, legislators in New Hampshire are voicing

concerns and continue to search for change. Action includes all clinic nurses; healthcare providers need to be well equipped and prepared to intervene quickly assessing and caring for the opioid overdosed patient. Dissemination of reinforcement of nurses and healthcare provider's new knowledge will facilitate better preparedness and knowledge that improves success in treating the opioid overdose patient and reducing death. Dissemination is an important component of translation of evidence, because if the translation is not disseminated, then no change in care will occur, and innovations will not be adopted (White & Dudley-Brown, 2012).

What is the social injustice related to opioid abuse and why should this matter? Opioid misuse both prescription and nonprescription poses significant risks for contacting HIV and Hepatitis, leading to other health problems (NH DHHS, 2014). The average age of those that died from an opioid overdose in New Hampshire for 2013, 2015, and 2016 was 20-29 years old for both male and females. New Hampshire hospitals reported significant increases in the number of babies being born with symptoms of opiate withdrawal related to maternal drug use. Babies suffer extreme pain, respiratory, cardiac and gastrointestinal compromise during withdrawal, some babies are not strong enough to overcome the deteriorating effects of withdrawal and die. Opioid addiction does not discriminate by race, age, gender or socioeconomic status. Your best friend could be addicted and you would not necessarily know as often the addicted person takes enough of the opioid to feel and act as their normal self. Unfortunately, they become tolerant of that dose and soon require more and more of the drug; they are unable to work and loose access to health care and seek other methods to obtain the opioid needed to make it through each day. Their families get fed up with the drug seeking behaviors, they lose legal custody of their children, friends walk away in disgust, and then they

overdose and die. New Hampshire and United States could lose a whole generation; the majority of them ages 20-29 years.

In the two clinics in rural New Hampshire promoting life saving strategies and developing effective protocols is the start to reduce opioid overdose deaths. A quality improvement DNP project has brought change to the practice as well as encouraging and promoting counseling for known addiction patients. Providing information and referrals to addiction counseling could be achieved through this DNP. Other benefits of the DNP project include, cautiously dispensing of opioids for acute pain and counsel patient to addictive potential as well as prescribing alternative therapy for acute and chronic pain. When alternative therapy such as massage and physical therapy are not effective, a limited use of an opioid for short term use with weekly monitoring by the healthcare provider should be considered. As previously stated this DNP project pre-testing, training and post testing demonstrated nurses, nurse practitioners and physician's once given the evidence based education could confidently disseminate and translate knowledge into action. The goal of this DNP project improved nursing, nurse practitioners and physician's confidence knowledge and skills allowing for accurate diagnosis and treatment of the opioid overdose patient reducing the risk of death.

As researchers continue investigating the best quality, quick assessment and care for the opioid overdose patient the result for this patient hinges on who is administering the care, availability of naloxone as well as knowledge to implement care.

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Appendix A

Letter EMS

BARTLETT/JACKSON AMBULANCE SERVICE
REPORT 2015

The year 2015 found Bartlett Jackson Ambulance Service at par with last year, slightly above the 500 call mark. The average call still takes about two hours from start to completion. Better documentation programs has sped this up a bit.

Bartlett Jackson Emergency Medical Services acts as a clinical site for SOLO and continues to be a great success! Several students have joined our service and we continue to encourage them to become involved in their own community wherever that may be.

Bartlett Jackson data collection regarding mTBI continues and is entering its third year. This is an effort to identify concussions in the early stages in order to provide the most appropriate treatments. This is a blind study that identifies the injury, how quickly it was recognized and the follow up care. Patients and schools have responded very well to the efforts put into this program. We are currently exploring ways to work with pediatric physicians regarding concussion injuries in younger children.

Motor vehicle accidents and structure fires continue to keep our members busy as well. Calls that result in standing by to support police officers have risen slightly over the past few years. This includes local police, as well as County Sheriffs and the NH State Troopers.

Opiate misuse continues to be an issue through the United States, and New

Hampshire is no exception. We are working with the Mount Washington Supports Recovery group and have participated in a Narcan training open to the public. Our goal is to make a positive impact and reduce substance addictions in our community.

Billing continues to be challenge as patients often change carriers yearly.
We have made a significant improvement gathering insurance cards at the times of service.

Bartlett Jackson EMS continues to develop community relations with a cooperative agreement with the VNA of Mt. Washington Valley. This is an effort to allow patients to remain in their homes and enjoy their quality of life, and results in lower health care costs. We offer lift assistance and suggestions as to where products such as power chairs and grab rails can be purchased, and occasionally, who patients can contact to assist in the installation of these products.

Bartlett Jackson EMS currently has five members in college and universities that are active members. Most of these students are pursuing careers in medicine.
These include Physician Assistant, , Pre Med, and advanced EMT and fire fighters.
We are proud to have helped launch many medical careers over the the years! This includes MDs, DOs, PAs, BSN, MSN and Paramedics that are currently working in the Valley that got their start with BJAS.

I would like to thank the towns of Bartlett and Jackson, the citizens of both towns and the folks of Harts Location for their support; we can't do this without You!

Thank you New Hampshire Fish and Game and the New Hampshire State Police from Troops E and F for all you do to keep us safe in both the urban and wilderness settings. We would also like

to thank Bartlett Fire, Jackson Fire, Bartlett Police, Jackson Police, Carroll County Sheriffs dispatch and officers for all their efforts. Also, to Memorial Hospital and Saco River Medical group for your trust and support in BJAS. Thank you to the AMC for sharing your personnel as well as Attitash, Jackson Ski Touring, Black Mt. patrollers, SOLO, and US Forrest Service. Working with all of you in back country injuries has always been a pleasure.

Respectfully submitted,

Signed form can be viewed on line at: www.Bartlett/JacksonAmbulance/report2015.

Appendix B

New Hampshire Legislature

NH HB 271 (2015)157 June 2, 2015 (a) A health care professional authorized to prescribe an opioid antagonist may prescribe, dispense, or distribute, directly or by standing order, an opioid antagonist to a person at risk of experiencing an opioid-related overdose or a family member, friend, or other person in a position to assist a person at risk of experiencing an opioid-related overdose. Any such prescription shall be regarded as being issued for a legitimate medical purpose in the usual course of professional practice. (b) A person or organization may, if acting pursuant to the provisions of subparagraph (a), store and possess an opioid antagonist, dispense or distribute an opioid antagonist, and administer an opioid antagonist to another person who the person believes is suffering an opioid- related overdose. (c) No health care professional who, acting in good faith and with reasonable care, prescribes, dispenses, or distributes an opioid antagonist directly or by standing order and no person who, acting in good faith and with reasonable care, stores, dispenses, or distributes an opioid antagonist or administers an opioid antagonist to another person who the person believes is suffering an opioid-related drug overdose shall be subject to any criminal or civil liability, or any professional disciplinary action, for any action authorized by this paragraph or any outcome resulting from an action authorized by this paragraph. (d) In this paragraph: (1) “Opioid antagonist” means any drug that binds to opioid receptors and blocks or disinhibits the effects of opioids acting on those receptors. (2) “Opioid-related drug overdose” means a condition including, but not limited to, extreme physical illness, decreased level of consciousness, respiratory depression, coma, or death resulting from the consumption or use of an opioid, or another substance with which an opioid was combined, or

that a layperson would reasonably believe to be an opioid-related drug overdose that requires medical assistance.

Appendix C

Clinic Naloxone Training Protocol

Training of nurses, healthcare providers include:

Week one: pretest, review of naloxone administration and non-medical prescription use of opioid overdosed patient clinic protocol.

Week two: nursing and healthcare provider demonstration of naloxone administration and opioid overdose clinic protocol (mock code scenario).

Week three: review of nursing and healthcare provider concerns, critique using naloxone and opioid overdose protocol.

Week four: posttest. Make changes if needed. Repeat for a total of 3 months until all clinic nursing and healthcare providers are trained in naloxone and opioid overdose protocol use.

Purpose:

This protocol specifies the criteria and procedures for nurses and healthcare providers to initiate emergent opioid overdose treatment employed by two rural clinics in New Hampshire.

Naloxone is an opioid antagonist that is used to reverse the effects of opioids.

Current research has determined that naloxone administration has been found to prevent death from opioid overdose as well as reduce disability and injury from an opioid overdose.

The rapid administration of naloxone may be life-saving in patients experiencing an opioid overdose. ((Doe-Simpkins, Walley, Epstein, & Moyer, 2009).

Criteria:

Persons eligible to receive naloxone under this protocol include:

All individuals presenting to the clinic with opioid overdose symptoms.

Drug: Naloxone Route: Intranasal only

Indication: Nurses, healthcare providers may administer naloxone to a person in the event of respiratory depression, unresponsiveness, or respiratory or cardiac arrest when an overdose from opioid is suspected of an individual / patient presenting at the clinic.

Procedure:

Check to see if individual/patient breathing, If not initiate rescue breathing, call for help, have someone call 911, get naloxone from code cart, AED, ambu bag, oxygen.

Assessment: ABC's Airway, Breathing, Circulation.

a. For pulseless individuals, initiate CPR per BCLS, guidelines.
b. Apnea with pulse: establish airway and begin rescue breathing.
c. Check for foreign body in airway, level of consciousness or unresponsiveness very low respiratory rate or not breathing, no response to sternal rub, respiratory status, gasping for air while asleep or odd snoring pattern, pale or bluish skin, slow heart rate, low blood pressure, no response to sternal rub. Pin point pupils any track marks may be present, although absence of these findings do not exclude opioid overdose.
d. Level of consciousness
    1. The nurse / healthcare provider determines that the person presents with a decrease level of consciousness as evidenced by:
    2. Difficult to arouse (responds to physical stimuli but does not communicate or follow commands, may move spontaneously).
    3. Unable to arouse (minimal or no response to noxious stimuli, does not communicate or follow commands).
e. Respiratory status

1. The nurse /healthcare provider determines that the person presents with a depression of respiratory status as evidenced by:
2. Decreased respiration rate
3. Utilize pulse oximetry if available
4. Nurse/healthcare provider determines need for naloxone administration

f. Administration: Intranasal naloxone

1. Assemble naloxone vial and intranasal atomizer
2. See Appendix J (rescue breathing and administration of naloxone).

   Spray half (1 ml) of the naloxone in one nostril and the other half (1 ml in the other nostril for a total of 2 mg).

g. Continue Rescue Breathing

1. Continue rescue breathing or BLS as needed.
2. If no response in 3-5 minutes an additional dose may be administered of the naloxone intra nasal spray.
3. Naloxone duration of action is 30 to 90 minutes.
4. Pt should be transferred to nearest hospital emergency room for post resuscitation care and treatment.

Considerations: Withdrawal can be unpleasant: Person may just breathe but not have full arousal, person may need continued rescue breathing and support. Do not leave alone.

Document event and treatment per clinic protocol.

Appendix D

Clinic Permission to implement capstone project:

Original copy in office Administration.

Permission has been granted to Geraldine Lau Family Nurse Practitioner to implement a non-medical use of prescription opioid overdose standard of care for our two rural clinics in New Hampshire. A budget of $3,000.00 will be at her disposal as needed to implement training of naloxone IN administration, and the development of a pre- and post-resuscitation protocol caring for the non-medical use of prescription opioid overdosed patient.

Subject:

1. Naloxone IN use and administration

2. Stocking code cart with IN naloxone

3. State of NH standard of care:

pre- and post-resuscitation of the non-medical use of prescription opioids individual.

Training to be completed within three months of initiation.

Signed copy of this form on file in office for reviewing.

Appendix E

University of Massachusetts Amherst Human Research Protection

University of Massachusetts Amherst Human Research Protection Office 110 Research Administration Building Research Compliance 70 Butterfield Terrace Amherst, MA 01003-9242 Telephone: 545-3428 FAX: 577-1728

MEMORANDUM To: Geraldine Lau, Nursing From: Human Research Protection Office Date: November 29, 2016 Project Title: DNP Capstone Project: Non-Medical Use of Prescription Opioids Overdose Treatment in a Rural Clinic IRB Number: 16-146 The Human Research Protection Office (HRPO) has evaluated the above named project and has made the following determination: The activity does not involve research that obtains information about living individuals and therefore does NOT require IRB review and approval. The activity does not involve intervention or interaction with individuals OR does not use identifiable private information and therefore does NOT require IRB review and approval. The activity is not considered research under the human subject regulations (Research is defined as “a systematic investigation designed to develop or contribute to generalizable knowledge.) and therefore does NOT require IRB review and approval. The activity is determined to meet the definition of human subject research under federal regulations and therefore DOES require submission of applicable materials for IRB review. For activities requiring review, please see our web pages for more on types of review or submitting a new protocol. For assistance, do not hesitate to contact the Human Research Protection Office at 545- 3428 for assistance.

Appendix F

Consent Form for Participation in a Research Study
University of Massachusetts Amherst

Researcher(s): Geraldine Lau FNP partial requirement of a DNP degree.
Mentor Heidi Root MD
Study Title: **Non-medical use of prescription opioid overdose: Treatment in a Rural Clinic.**
Funding Agency: No funding elicited.

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1. WHAT IS THIS FORM? THIS IS A HUMAN SUBJECTS PROTECTION FORM.

This is a human subject's form requesting your participation in a quality DNP project that promotes: A new life-saving protocol enabling nursing and healthcare provider's educational information to administer naloxone to non-medical use of prescription opioids overdose individuals an intervention preventing death.

2. WHO IS ELIGIBLE TO PARTICIPATE.

This training is designed especially for nursing and healthcare providers employed in two rural New Hampshire clinics that do not currently stock naloxone or have a defined non-medical use of prescription opioid overdose protocol to save lives.

3. WHAT IS THE PURPOSE OF THIS STUDY?

The purpose of the study is to educate nursing and healthcare providers in two rural clinics how to administer naloxone intranasal and administer pre- and post-resuscitation care to a non-medical use of prescription opioids overdosed patients that may present at our clinics.

4. WHERE WILL THE STUDY TAKE PLACE AND HOW LONG WILL IT LAST?

This educational training will take place in two rural New Hampshire clinics owned by Saco River Medical Group, one in Conway, NH and the other in Glen, NH. The training is expected to last three months in total.

5. WHAT WILL I BE ASKED TO DO?

If you agree to take part in this study, you will be asked to participate in a written pre-and posttest.
You will also participate in a pre-training demonstration administering naloxone and participate in mock code administering pre-and post-resuscitation to a non-medical use of prescription opioids overdosed patient.

6. WHAT ARE MY BENEFITS OF BEING IN THIS STUDY?

Hoped direct benefits to the participant that may be reasonably expected as a result of the research, includes added nursing and healthcare provider knowledge promoting confident

administration of the drug naloxone intra nasal and treatment of the non-medical use of prescription opioids overdose patient using a evidence based pre- and post-resuscitation intervention preventing death.

7. WHAT ARE MY RISKS OF BEING IN THIS STUDY?

There are minimal risks associated with this DNP project educational training. At times, you may feel uncomfortable with this length of the training or taking the surveys, but you may decline answering questions on the pre-and post-written testing. At any time, you may decline participation in the educational DNP project.

8. HOW WILL MY PERSONAL INFORMATION BE PROTECTED?

Each participant will be assigned a code. Written pretests and posttests will be coded and not identifiable by name. All materials will be kept in a locked and secure file in the researcher's office. Consent forms will not be stored with the pre-test and posttest. Only the researcher and university research team members will have access to evaluations. Information from this project will be presented in summary format and you will not be identified in any publications and presentations.

9. WILL I RECEIVE ANY PAYMENT FOR TAKING PART IN THE STUDY?

No payment is given as participation in the DNP educational training project.

10. WHAT IF I HAVE QUESTIONS?

Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the researcher Geraldine Lau FNP at 603-327-7463. If you have any questions concerning your rights as a research subject, you may contact the University of Massachusetts Amherst Human Research Protection Office (HRPO) at (413) 545-3428 or humansubjects@ora.umass.edu.

11. CAN I STOP BEING IN THE STUDY?

You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time. There are no penalties or consequences of any kind if you decide that you do not want to participate.

12.WHAT IF I AM INJURED?

The University of Massachusetts does not have a program for compensating subjects for injury or complications related to human subject's research, but the study personnel will assist you in getting treatment.

13. SUBJECT STATEMENT OF VOLUNTARY CONSENT

When signing this form, I am agreeing to voluntarily enter this study. I have had a chance to read this consent form, and it was explained to me in a language which I use and understand. I have had the opportunity to ask questions and have received satisfactory answers. I understand that I can withdraw at any time. A copy of this signed Informed Consent Form has been given to me.

_____	_____	_____
Participant Signature:	Print Name:	Date:

By signing below I indicate that the participant has read and, to the best of my knowledge, understands the details contained in this document and has been given a copy.

_____	_____	_____
Signature of Person Obtaining Consent	Print Name:	Date:

Appendix G

Written pre-posttest: Naloxone IN administration to a non-medical opioid overdosed patient.

1. What is the first assessment of this patient?
    A. Is he/she breathing?
    B. He/she sleeping?
    C. He/she is smiling at you?
2. If not breathing?
    A. Call for help?
    B. Start rescue breathing?
    C. Shake patients shoulder?
3. Should you call/have someone call 911?
    A. Yes
    B. No
4. Which is the most suggestive signs of opiate overdose?
    A. Violent aggressive behavior?
    B. Depressed respirations, pale, clammy skin, gurgling, snoring, non-responsive, slow heart rate, slow pulse if any, blue lips or fingertips (cyanotic)?
5. What do you do first if unresponsive and probable opioid overdose?
    A. Rescue breath?
    B. Call code/call 911?
    C. Administer naloxone, intranasal spray?
    D. All above?

6. What is naloxone?
    A. Not sure.
    B. Opioid antagonist.
7. How do you administer Naloxone IN (intranasal)?
    A. Intranasal?
    B. Orally?
8. Which of the following doses will likely result in the highest amount of naloxone absorption in the blood stream?
    A. Dose 0.5 mg: concentration 1mg/ml; volume 0.5 ml atomized into the nare?
    B. Dose 0.8 mg: concentration 0.4mg/ml; volume 2 ml; delivery method 1 ml atomized into each nare?
9. What are common reasons that a nasally applied drug might not be effective?
    A. The medication concentration is to low, requiring high volumes to obtain proper dosing.

        These high volumes then run out the nose and cannot be absorbed.
    B. The patient's mucosa is covered with blood or mucus preventing absorption of the administered medication.
    C. All above.
10. True or False? Which is a relatively long-lasting narcotic antagonist?
    A. Naloxone?
    B. Nalmefene?
11. What is the duration of naloxone IN once administered?
    A. Four hours? B. 30 to 90 minutes?

Appendix H

Opioid Symptoms

Opioid High	Opioid Overdose
Muscles relaxed	Pale, clammy skin
Speech slowed/slurred	Decreased breathing/not breathing
Sleepy appearing	Deep snoring/gurgling
Responsive to stimuli (shaking, sternal rub, yelling)	Not responsive
Normal heart beat / pulse	Slow heart rate/ slow pulse/none
Normal skin tone	Blue lips and or fingertips (cyanotic)

Appendix I

Budget

Training costs estimated for two rural clinics in New Hampshire.

Training of pre- and post-resuscitation of the opioid overdosed patient for nurses, nurse practitioners and physicians.

1. Training hours for twenty nurses, ten nurse practitioners, and five physicians.

RN's: $24 x 10 =	$240.00
LPN's:$18 x 10 =	$180.00
NP's: $90 x 10 =	$900.00
MD's:$110.00 x 5 =	$550.00

A. Purchasing emergency naloxone kits for code carts and wall mounted naloxone kits.

1. Five wall mounted kits at $100.00 each (each kit contains gloves, nasal naloxone atomizer with instruction for use and mask). This is a plastic tie locked mounted box.

2. Replacement supply kits for each wall unit: $20.00 (this is naloxone nasal atomizer).

3. Three code cart naloxone nasal atomizer kits: $75.00 each equaling $225.00.

4. Code card replacement naloxone nasal atomizer is $20.00 each.

B. Exam room posters related to opioid overdose promoting open communication with nurses, nurse practitioners and physicians.

1. Opioid posters $ 10.00 x 20 = $ 200.00

C. Unexpected costs will include BLS and ACLS training for those nurses, nurse practitioners and physicians not certified or up to date on current certification.

1. Three participants $ 200.00 = $ 600.00

Estimated total initial budget: $3,000.00

Appendix J

Poster rescue breathing administration of naloxone: Also placed in clinic waiting rooms.