ADVANCEMENTS OF NURSING CARE IN INTERVENTIONS TO REDUCE OVERPRESCRIBING AND ADVERSE EFFECTS OF OPIOIDS FOR POSTOPERATIVE PAIN MANAGEMENT

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Abstract

Opioids are a class of medications that block receptors in the brain that signal pain. The use of this medication can result in substance abuse disorder which poses a risk of overdose and death. The rise in opioid prescriptions highlights the demand for new interventions to be implemented when assessing the need for opioids in treatment plans. A licensed prescribing healthcare provider uses diagnostic tools to evaluate the requirement of a medication. By encouraging the use of effective interventions in healthcare facilities, there will be a reduction in overprescribing; decreasing the risk of poorly managed treatment, opioid abuse disorder, overdose, and death. Opioids can be taken responsibly and are effective in managing pain. However, there are measures that can be implemented to ensure medication is not being abused and is the right match.

A systematic literature review was performed using the CINAHL Plus database to investigate interventions that healthcare providers have implemented to prevent overprescribing of opioids. Major themes are (a) presentation of prescribing behaviors to surgeons reduced overprescribing, (b) standardization of number of pills distributed based on surgeries decreases number of opioids prescribed, (c) screening tools to properly assess client qualifications for opioids, (d) non-narcotic methods: use of Transversus Abdominis Plane (TAP) block. The opioid crisis, management of opioids, prescribing behaviors amongst healthcare providers, and interventions targeting opioid abuse, are topics of focus for this literature review. In order to prevent complications in clients taking opioids, interventions must be implemented.

Key Words: overprescribing opioids, healthcare interventions, prescribing behaviors

Table of Contents:

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Introduction

Opioids are prescription drugs that are derived from the plant opium, it is commonly used to treat post-operative pain (Butanis, 2018). This medication limits neurotransmitter release, therefore, largely affecting the central and peripheral nervous system (Chahl, 1996). A person's perception of pain is ultimately altered. The central nervous system (CNS) is composed of the brain and spinal cord whereas the peripheral nervous system (PNS) contains all the nerves associated with the CNS which is broken into 2 systems, somatic and autonomic nervous system. The nervous system is responsible for receiving information, processing, and coordinating a response based on external or internal stimuli.

Although opioids are effective in pain management, they are one of the most abused prescription drugs in the United States (Butanis, 2018). Overprescribing of opioids places a client at risk for physical dependence, addiction, and overdose. "Physical dependence is when the body requires a specific dose of a particular drug, such as a prescription opioid, in order to prevent withdrawal symptoms," (Donofrio, 2018). The body is dependent on the medication in order to "function", and a decrease in dosage or cessation of the medication can lead to withdrawal symptoms or desire to use. Despite this, a client physically dependent can still manage their impulses. Addiction or substance use disorder (SUD) is a chronic, treatable illness (Donofrio, 2018). Regardless, both are affecting their autonomic system, which is responsible for involuntary processes like breathing, digestion, and blood pressure regulation.

Educational interventions for prescribers and clients, standardization of opioids, and screening tools will minimize the risk of adverse effects of opioids, although there is

still more to learn regarding appropriate opioid prescribing for basic surgical operations. Reviews of the healthcare establishment's prescribing behaviors are effective in educating prescribers. Clients in turn will receive properly informed education about the opioids they are prescribed as well as highly effective alternatives to pain management. There is a lack of information about how many opioids should be prescribed for each surgical intervention which leads to a wide variation in the number of pills distributed. Standardization of opioids will result in the necessity of proper education for all healthcare professionals and guidance in how much should be prescribed. Screening tools should be used to assess substance abuse, identify clients at risk, and avoid unnecessary use of medication. Altogether, this will aid in minimizing the risk of physical dependence, addiction, and overdose of opioids.

Background

A national survey from 2015 estimates, "91.8 million US adults (38.7%) used a prescribed opioid that year (mostly for pain), and an estimated 13.4 million of these adults misused or abused them [12]. Among adults prescribed opioids, 79% were long-term users (> 90 days of use) in 2013 - 2014 compared to 45% in 1999 - 2000 [13]. Opioid use for persistent pain peaks in the elderly [14]." (Safer, 2019) Lack of education and interventions has led to an increase in prescription distribution for opioids to treat post-operative pain. There are effective alternatives to pain management.

To combat overprescribing of opioids in post-operative pain management, education is essential for both the prescriber and client. Through proper education and analysis of prescribing behavior, areas of improvement can be highlighted to formulate means of intervention (Hill, 2017). Thus, information can be relayed to clients about

alternatives for postoperative pain management. An example being non-steroidal anti-inflammatory drugs like acetaminophen (Hill, 2017). An increase in alternatives for pain management will result in a decrease in the usual number of pills prescribed. In turn, standardization of pills can be established to set a guideline to which prescribers may refer to prior.

Standardizing opioids is a useful guideline that can be used as a tool when deciding how many pills are necessary. Every surgery results in different kinds of pain. Pain is also subjective, and it is important to keep in mind client satisfaction when considering a decrease in pill distribution. Due to lack of information on opioid prescribing, a consensus-based method can be used to formulate guidelines in opioid prescribing (Stepan, 2019). Consensus-based method is when experts in a specific field use their knowledge and experience as well as clinical evidence to formulate a solution to the identified issue (Stepan, 2019). As a result, guidelines were successfully developed for an institution. This hospital created recommended prescribing practices by procedure. It proved to be successful as they saw a decrease in the number of pills prescribed (Stepan, 2019).

Screening is the use of questionnaires to assess a client. There are several questionnaires that are used to screen clients on a variety of issues/treatments. The use of assessment tools like screening can enable the authorized prescriber to accurately decide what will be best for the client. The questionnaires used would need to be specialized in providing information specific to substance abuse. Important factors to note about substance abuse include what kind of substance, frequency of use, and how recent the last use was. Prior to prescribing an opioid the client will have to be assessed with a

questionnaire to ensure that there is no risk for addiction or abuse. The screening tools can also be used long term to educate and assess the functionality of the medication. RIGHTT is an assessment tool by Yorkgitis in 2018. RIGHTT stands for Risk for adverse events, Insight to pain, Going over pain plan, Halting opioids, Tossing unused opioids, and Trouble Identification (Yorkgitis, 2018).

Non-narcotic methods are being implemented to improve pain management and decrease the use of opioids. Transversus Abdominis Plane (TAP) blocks are used in abdominal surgeries as postoperative analgesia (El-Boghdadly, 2022). It is a local anesthetic that is injected into the transversus abdominis and internal oblique muscles (El-Boghdadly, 2022). The purpose of the nerve block is to decrease the number of opioids used. The procedure is performed using ultrasound imaging and placed when the client is under general anesthesia. The injections can be placed either before or after the incision, however it is more common at the end of the procedure after the skin is closed (El-Boghdadly, 2022). There are different kinds of local anesthetics that can be used such as ropivacaine or bupivacaine. Other medications can be added to the local anesthetics like epinephrine, which has been shown to decrease plasma concentration of local anesthetics and increase the length of the block (El-Boghdadly, 2022). The complications of TAP blocks include puncture of the peritoneum, however with the use of ultrasound guidance it is a rare incidence (El-Boghdadly, 2022). Other complications include local anesthetic toxicity due to the vascularity of the TAP (El-Boghdadly, 2022). The use of TAP blocks has been reported in many surgeries involving the abdomen and has shown a decrease in the number of opioids postoperatively as well as less pain. Surgeries that have

been conducted using TAP in this literature review include appendectomies and laparoscopic cholecystectomies.

Methods

A systematic review of literature was conducted to identify current methods being implemented to tackle overprescription of opioids for post-operative pain management. The articles are within the years of 2015-2022 to provide relevant research that is currently in action. Inclusion criteria consisted of articles written in English language, peer-reviewed, and in full text. This literature review was performed using the CINAHL Plus database. A search was conducted using the following terms: overprescribing opioids, healthcare interventions, and prescribing behaviors.

Results

Six studies met the criteria of identifying the methods that are being implemented to tackle overprescription of opioids for post-operative pain management. Within the six articles four major themes are (a) presentation of prescribing behaviors to provider reduced overprescribing, (b) standardization of number of pills distributed based on surgeries decreases number of opioids prescribed, (c) screening tools to properly assess client qualifications for opioids (d) non-narcotic methods to reduce the number of opioids being prescribed postoperatively.

Presentation of Prescribing Behaviors to Surgeons Reduced Overprescribing

Researchers have found educating surgeons on their prescribing behaviors resulted in a drastic change in the number of pills prescribed (Hill, 2017). Surgeons were recommended a new number of pills that clients would need compared to what they were prescribing before for post-operative pain management. This resulted in a 53% decrease

in opioid prescriptions, half of the baseline number (Hill, 2017). Surgeries that are in their study include: partial mastectomy (PM), partial mastectomy with sentinel lymph node biopsy (PM SLNB), laparoscopic cholecystectomy (LC), laparoscopic inguinal hernia repair (LIH), and open inguinal hernia repair (IH) (Hill, 2017). Before providing education, the average opioids prescribed were 19.8 (PM), 23.7 (PM SLNB), 35.2 (LC), 33.8 (LIH), 33.2 (IH). (Hill, 2017). Post provider education the average opioids prescribed were 5.1 (PM), 9.6 (PM SLNB), 19.4 (LC), 19.3 (LIH), 18.3 (IH) (Hill, 2017). After properly educating surgeons, information was relayed to clients on how to adequately treat their pain at home. Clients were educated on proper disposal of unused opioids and alternatives such as the use of nonsteroidal anti-inflammatory drugs (NSAIDs) (Hill, 2017). They were told to take NSAIDs first and only use opiates for persistent pain (Hill, 2017).

By providing an alternative and properly educating on how it can be just as helpful, it will expand the client's understanding of pain management. Their awareness of how many opioids they are using will also increase. This is a practice used in healthcare where the least invasive or critical procedures are implemented first. As a result of this study, 224 participating clients were prescribed 1,913 pills, 656 pills were taken, and only 1 refill was requested (Hill, 2017). A concern is that clients would not be able to treat their pain adequately due to the decrease of opioid pills. However, due to education provided by surgeons on how to use NSAIDs, clients with pain postoperatively reported NSAIDs as more effective than opioids (Hill, 2017). Further research on NSAIDs over opioids will be implemented to better understand if certain procedures will not require the

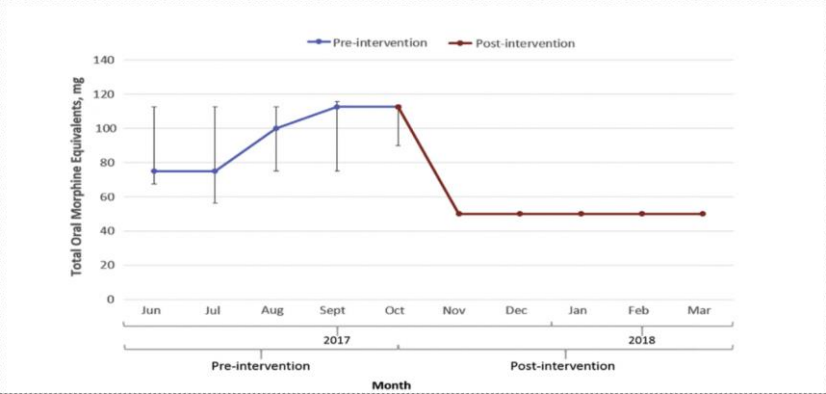
use of opioids. It is important to note however that each procedure will differ in post-operative pain. Pain is a subjective experience and will vary from client to client.

Standardization of Number of Pills Distributed Based on Surgeries

Standardization involves set guidelines which help format consistency. Due to the lack of knowledge about how many pills are required for each surgery post-operatively, a guideline will be useful for providers to refer to. An example of guideline implementation is STOP Narcotics; it is a standardized pain care bundle that has decreased opioid prescribing and at times eliminated opioid use altogether (Hartford, 2018). STOP Narcotics implemented programs that include provider education, opioid-reduced prescriptions, and non-opioid analgesia strategies (Hartford, 2018). Standardization is seen in the NSAID prescriptions they set up with a schedule for their post-operative clients. "A prescription for a non-steroidal anti-inflammatory drug (meloxicam 7.5 mg or naproxen 400 mg) was given with instructions to take it regularly for 72 hours" (Hartford, 2018). This is followed by further instructions to use acetaminophen for 72 hours, then ibuprofen with acetaminophen as needed (Hartford, 2018). Clients are also given a prescription only to be filled if pain control was not achieved, which consisted of tramadol or codeine. This prescription expires 7 days after surgery (Hartford, 2018). This way the client has 6 days to manage pain with NSAIDs, if within the 6 days pain is not relieved, they are still left with the spare prescription to claim by the 7th day. STOP Narcotics standardized client care bundle proved to be effective. "Although only 45% of clients filled their opioid prescription, the clients who required their opioid prescription for additional pain control was 9% of the post-intervention group" (Hartford, 2018). The intervention would be beneficial to maintain the rate of opioid prescriptions low. Still,

36% of clients is less than the percentage of clients using opioids in comparison to other institutions (Hartford, 2018).

Figure 1:



(2018) Oral Morphine Equivalents Prescribed in the Pre-and Post-Intervention Groups. Retrieved from https://doi.org/10.1016/j.annemergmed.2018.04.007

Screening Tools

Screening tools are available for providers to assess clients on their risk for substance abuse. These assessments are useful in determining what kind of pain management would be beneficial. An example of a screening tool is the NIDA Quick Screen. This screening tool asks one question: “In the past year, how often have you used the following: alcohol, tobacco products, prescription drugs for non-medical reasons, and/or illegal drugs” (NIDA). If the client answers yes to drinking alcohol heavily for one or more days, they are an “at-risk drinker” and the provider will support them with proper resources (NIDA). If the client answers yes to using tobacco, they are at risk and be advised to quit and are provided with resources on smoking cessation (NIDA). The clients who say yes to use of prescription drugs for non-medical reasons or illegal drug use the screening will proceed to NIDA-Modified ASSIST (NIDA). This section of the

screening will provide specific information on what the client has used or is using. At the end of the NIDA-Modified ASSIST the client is scored on a scale of 0-27+. 0-3 places the client as low risk for illicit or nonmedical prescription drug use, 4-26 is moderate risk, and 27+ is high risk (NIDA). The purpose of screening tools is to evaluate the risks that a client is at prior to prescribing medications or suggesting treatments. All clients should be screened prior to being prescribed an opioid for pain management. Other screening tools include Opioid Risk Tool (ORT) by Webster in 2005 it assesses personal and family history of substance abuse and psychological disease, Addiction Behaviors Checklist (ABC) by Wu in 2006 which is used to assess addictive behaviors from their last visit to current date (Duber, 2018).

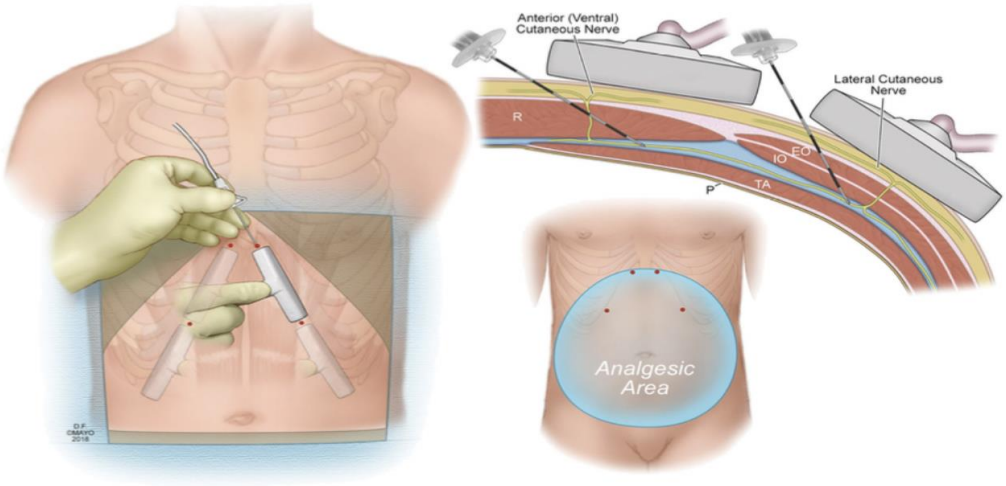
A postoperative opioid acronym RIGHTT, is a strategy that was developed to decrease misuse and unnecessary prescribing (Yorkgitis, 2018). RIGHTT stands for Risk for adverse events, Insight into pain, Going over pain plan, Halting opioids, Tossing unused opioids, and Trouble Identification (Yorkgitis, 2018). This tool addresses the needs that a surgeon must cover to minimize the adverse risks of opioid use. It serves as a checklist for the surgeon to ensure that the client was properly informed of the risks opioids can have, what to expect for pain postoperatively, when to stop using the medication, how to properly dispose of the medication, and how to recognize that pain has become chronic. Clients also can use this tool to self-assess, this allows full engagement between the provider and client.

Non-narcotic method: use of Transversus Abdominis Plane (TAP) block

Transversus Abdominis Plane (TAP) blocks are administered by surgeons using ultrasonographic guidance (Hernandez, 2019). The medication is 50 mL of 0.25%

bupivacaine and 20 mL 1.3% liposomal bupivacaine (Hernandez, 2019). In figure 2, the technique for the TAP block is demonstrated (Hernandez, 2019). “TAP blocks were performed within the transversus abdominis plane in two sites on each hemi-abdomen—one subcostal block between the posterior rectus sheath and transversus abdominis and one more lateral and inferior between the internal oblique and transversus abdominis guidance using an 18-gauge spinal needle” (Hernandez, 2019). TAP blocks target nerves of the anterior rami of the thoracolumbar spinal nerves (T6-L1) (El-Boghdadly, 2022). The study of TAP block was conducted on clients who had appendicitis. Appendicitis is the inflammation of the appendix; it needs to be removed so it does not rupture and infect the peritoneum (inner lining of the abdomen). A very important feature of the injection is that it is injected bilaterally and not only on the affected side where the incision is. This is because inflammation of the peritoneum can also cause pain, not just the incision site (Hernandez, 2019).

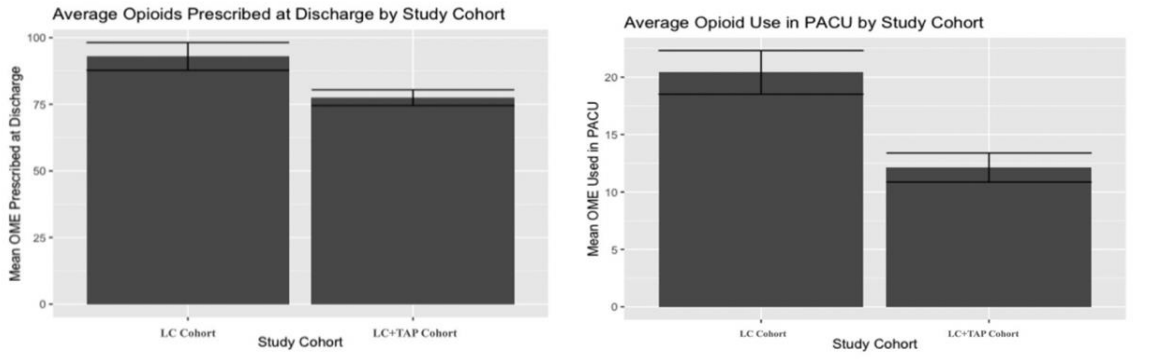
Figure 2



(2019) Technique for transversus abdominis plane block” https://doi.org/10.1007/s11605-018-04100-0

TAP blocks have proven to be successful at decreasing the need for opioids in the post anesthesia care unit (PACU). A study conducted found that clients who had a laparoscopic cholecystectomy with TAP block reported on average an initial pain score of 3.39 compared to those who had no TAP block who reported 4.17 (Jeffrey, 2023). The TAP block aids in decreasing the number of opioids by numbing the nerves along the abdominal wall. This can be related to the numbing feeling that is felt after a tooth procedure. Pain is not usually felt until the numbness wears off. Due to its mechanisms, the average of opioids used in the PACU and prescribed at discharge is noticeably lower for clients who received TAP block than those who did not as depicted in figure 3 (Jeffrey, 2023).

Figure 3



(2019) "Average opioids in oral morphine equivalents required by each study cohort in (left) the post anesthesia care unit, (right) prescribed to each study cohort at discharge from the post anesthesia care unit" LC: laparoscopic cholecystectomy; LC+TAP: laparoscopic cholecystectomy with transversus abdominis plane block; OME: oral morphine equivalent; PACU: post anesthesia care unit. https://doi.org/10.1007/s11605-018-04100-0

Discussion

This literature review demonstrates the interventions that have been implemented to decrease overprescribing of opioids to reduce adverse events. Provider education, standardization of opioids, screening tools, and TAP block procedures have all been proven to reduce the number of pills significantly. Education is useful for both the provider and the client. The providers learn about their prescribing behaviors and its relation to the opioid epidemic. In turn, information is relayed to clients about the importance of reducing opioids. Clients can take control of their health and become more involved in post-operative care. Pain is subjective, the client knows best about how they feel. When provided with information, it can be used for their advantage. As a result of educating clients on how to use opioids and NSAIDs, the number of opioids prescribed decreased, and clients reported NSAIDs to be more effective in relieving pain. By expanding education on opioids, studies can be further expanded, therefore increasing how much is known about the medication. Lack of information about opioids places healthcare at a disadvantage.

There is a lack of information about how many opioids should be prescribed for each surgical intervention which leads to a wide variation in the number of pills distributed. Standardization of opioids creates a guideline that can be referred to when prescribing opioids. By providing a recommendation for the number of pills that should be prescribed for certain procedures, the chances of overprescribing will be lower. Other methods of standardization include prescription bundles, for a specific procedure a client will receive a specific combination of prescriptions and treatment options. These bundles are alternatives to using opioids to manage pain, proving that post-surgical pain

management does not have to be treated with opioids alone. Further implementation of bundles used to target a decrease of opioid usage will promote more studies on other kinds of bundles. More research as to how these bundles are effective will be accessible.

Primary prevention methods consist of screening, which is important for early identification of issues that will eliminate the risk of complications in the future. Further interventions may be carried out if a client is identified to be struggling with addiction or substance use disorder. Improving assessments prior to prescribing medications will provide a better insight as to whether or not the treatment is appropriate. Screening tools such as the NIDA Quick Screen and RIGHTT are formatted to guide assessment. Particular issues that may arise as a result of a specific treatment will be identified during the screening. The prescribers will have a chance to create a plan with their client on how to manage their pain. In doing so, a realistic set of expectations will be established with their client as they proceed through the treatment. Clients will be aware of what to expect and what to do should an adverse event arise. The ability to identify and discuss these situations is an educational moment for the client. In turn, they will be able to carry out their own care, improve understanding of their health, wellbeing, and decision making. Healthcare establishments need to implement educational opportunities where prescribers can learn how to use screening tools, what they are for, and how to select the right one.

The use of non-narcotic methods has been beneficial to postoperative pain management. TAP blocks are used more with general surgery which consists of contents in the abdominal cavity/digestive system. The surveys provided on the level of pain reported postoperatively after the use of TAP blocks reported a slight difference compared to surgeries completed with no TAP blocks. There was more of a difference in

the number of opioids prescribed postoperatively for those who received TAP blocks compared to those who did not. It may be beneficial to understand why the difference in pain is not as significant and understand the different factors that correlate. More research can be dedicated to understanding how other non-narcotic methods during surgery may improve pain report and other procedures that may benefit from this intervention. It is also important to consider the resources that are available in order to provide TAP blocks like ultrasound devices to target the proper nerves. Expansion of knowledge on this non-narcotic method will be useful for other establishments as well as clients.

Limitations

There are several limitations that exist throughout this systematic literature review. The first limitation is that only one database was used to conduct a literature search, CINAHL Plus with Full Text. Had another database been used, there could be other articles used for this review. Second, there are many surgeries and different medical diagnoses that use opioids as treatment for pain management. This literature review focuses on general surgery procedures such as partial mastectomy, partial mastectomy with sentinel lymph node biopsy, laparoscopic cholecystectomy, laparoscopic inguinal hernia repair, and open inguinal hernia repair. In the future, research on the number of pills used for other surgical procedures shall be implemented to fully understand the use of opioids for pain management and other interventions that have taken place.

Conclusion

The purpose of this literature review is to identify interventions that have been effective in decreasing the number of opioids prescribed to avoid the adverse effects. The purpose of decreasing opioids is to aid in fighting the opioid epidemic. The population is

prescribers who are active in the client's postoperative treatment. Many are dying from overdose on opioids and are currently battling their addiction. The opioid epidemic can be fought in numerous ways, and it can begin by reducing the number of pills being prescribed. There are many issues that need to be addressed within each healthcare institution. However, proper education can go a long way. The road to a solution of the opioid epidemic is very complex and not very clear. Through collaboration, open minds, and education together solutions can be discovered and put to work by many. At the end of the day, we all share a common goal which is to ensure our clients will live a safe and healthy lifestyle.

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