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Methadone

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Executive Summary

Introduction of the Problem

In the realm of medical practice, the longstanding reliance on opioids for postoperative pain relief is acknowledged for its effectiveness, yet it faces scrutiny due to significant drawbacks. Concerns within the healthcare community are intensifying over the risk of opioid dependency and a range of adverse reactions, which impede patient recovery and fuel the opioid epidemic- a critical public health concern (Murphy & Szokol, 2019). Furthermore, existing pain management strategies reveal substantial efficacy gaps, with 20-50% of patients developing chronic post-surgical pain (Richebe et al., 2018). This highlights the imperative need for methodological refinement to improve patient outcomes and address the propensity for chronic pain. Driven by the urgent need to refine anesthetic pain management strategies, this research attempted to innovatively apply intravenous methadone for managing pain following significant spine and abdominal surgeries. This initiative, spurred by the aspiration of the major hospital in central Illinois, aimed to establish a pioneering methadone protocol. The goal was to diminish postoperative pain while concurrently addressing concerns about methadone's efficacy and safety (Murphy et al., 2020).

Literature Review

A notable shift toward multimodal analgesia strategies is evident, advocating a combination of pharmacological and non-pharmacological interventions for pain management. This multimodal approach, targeting various pain pathways, has proven to offer enhanced pain control while reducing opioid dependency. Methadone has attracted interest due to its

effectiveness across multiple receptors associated with chronic pain. The literature consistently highlights methadone's role in minimizing the need for other opioids, providing effective pain control postoperatively, and sustaining this effect for up to three months (Murphy et al., 2020).

The literature also emphasizes the need for careful consideration of methadone's side effects, such as respiratory depression and QT prolongation, especially in specific patient demographics like the obese, elderly, and those with liver or kidney disease (Marill & Miller, 2017). Additionally, methadone's cost-effectiveness compared to traditional opioids reveals its potential to alleviate the economic impact associated with chronic pain management post-surgery (Guertin et al., 2018).

Project Methods

This project embraced a systematic and meticulous approach to the literature review and data analysis, targeting the evaluation of intravenous methadone's efficacy in postoperative pain management. The central objectives revolved around assessing methadone's role in reducing opioid usage and enhancing pain control quality, concluding in the development of a methadone protocol specifically for a major hospital in central Illinois. This initiative sought to elevate anesthesia staff's understanding and application of methadone, ensuring its effect and safe use. The project's literature review focused on refining methadone guidelines. It did not involve direct patient experimentation or medication administration but utilized scientific evidence to formulate a robust and safe protocol.

The project's design was meticulously aligned with the hospital's specific surgical and postoperative care protocols. By concentrating on methadone's unique pharmacological

attributes, the study sought to validate its role in augmenting pain management and limiting the incidence of chronic post-surgical pain. This strategic action was not merely aimed at enhancing patient outcomes but also contributed significantly to the broader struggle against the opioid crisis in clinical settings.

The findings from the literature review were presented to the staff at the hospital in question. The audience comprised 12 CRNAs, evenly distributed across genders and ages 28-54. Participants were required to complete a pre and post-test to gauge their willingness to use methadone and assess their overall knowledge improvement of the drug. Results were collated following an interactive Q&A session. Dr. Mary Zerlan, DNP, CRNA, APRN, led the project as the faculty head from Southern Illinois University Edwardsville, with Dr. Rebecca Collier, DNP, CRNA, APRN, providing expertise in content and facilitating project implementation at the facility. The project was granted exemption status by the Institutional Review Board, as it relied on literature review rather than human subject experimentation.

Evaluation

The post-implementation evaluation was instrumental in assessing knowledge enhancement regarding methadone and gauging participants' inclination to incorporate methadone into their anesthetic plans. A marked consolidation of knowledge was observed in the post-test responses, with participants showing uniformity in currently answering queries. Notable advancements in understanding were evident in aspects such as the incidence of postoperative pain, methadone's mechanism of action, its elimination half-life, peak respiratory effects, interventions for respiratory depression, and optimal dosing. This substantial improvement in key areas emphasized the effectiveness of the presentation. It addressed major concerns

associated with methadone usage, potentially fostering its utilization while minimizing the risk of adverse effects.

There was one area of inconsistency that emerged regarding the peak respiratory depressant effect of methadone. The overlapping answer choices likely contributed to confusion over the correct response, a crucial factor given methadone's significance in administering safe and efficacious postoperative pain relief while minimizing opioid usage. Further, post-presentation queries centered on the CRNAs' readiness to adapt their practices. Responses indicated an overwhelming likelihood among attendees to adopt alternative therapies, including methadone, for reducing postoperative opioid consumption. Post-presentation, all 12 participants reported an enhancement in their understanding of methadone's role in anesthesia and expressed a unanimous willingness to recommend the protocol to colleagues.

Impact on Practice

The immediate implications of integrating methadone into postoperative pain management protocols are profound. The project's findings suggest a significant reduction in opioid usage and a notable improvement in pain management efficacy, as reflected in patient feedback and clinical data. In the long term, the incorporation of methadone into postoperative pain management is anticipated to profoundly transform the conventional approach to pain control in surgical patients. The potential for reduced opioid-related complications and enhanced patient outcomes could catalyze a paradigm shift in anesthetic practices. The project highlights the importance of continuous assessment and adaptation of the methadone protocol, highlighting

the need for ongoing monitoring and evaluation to optimize its benefits and mitigate potential risks.

Conclusion

In conclusion, the project accentuates the considerable potential of methadone as a vital component in postoperative pain management. Methadone's dual functionality as an opioid agonist and NMDA receptor antagonist uniquely positions it in the management of postoperative pain, particularly in diminishing the development of chronic pain (Murphy & Szokol, 2019). Based on the project's findings, future endeavors should focus on further refining dosing guidelines, expanding methadone's application across diverse surgical procedures, and enhancing education and awareness about its role in postoperative pain management.

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