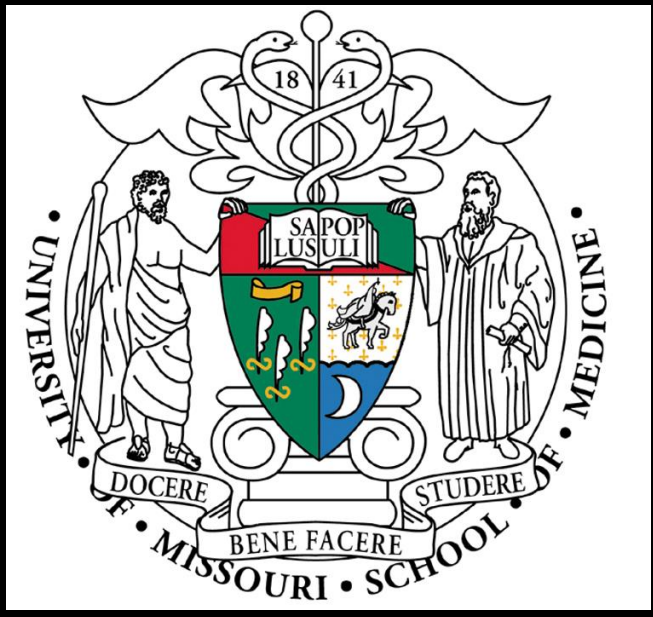




REDUCING OPIOID UTILIZATION WITH LIPOSOMAL BUPIVACAINE IN POSTOPERATIVE LUMBAR SPINE PROCEDURES



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INTRODUCTION

- The opioid epidemic has been an ongoing concern since the 1990s, and the number of opioid overdose deaths has quadrupled since 1999.³
- Recent actions have been taken to educate the public and guide opioid prescribing guidelines; however, the rate of opioid overdose deaths increased by 5% from 2018 to 2019.³
- Multiple studies have shown that patients who take opioids for acute pain have a greater likelihood of long-term opioid use, abuse, and overdose.⁴
- Due to the increasing rate of opioid abuse, there is a great need for alternatives to opioid analgesics for postoperative pain management.
- In lumbar spine procedures, most patients require some form of opioid pain medication for pain control.
- Liposomal bupivacaine is a local anesthetic that has been found to last up to 72 hours post-injection.⁵
- Liposomal bupivacaine use has proven to be efficacious in reducing postoperative pain and opioid utilization in several surgical settings, but its utility in spine procedures has yet to be established.⁵

Hypothesis

This study hypothesizes that the administration of liposomal bupivacaine in postoperative spine patients will result in a reduction of opioid utilization without compromising pain management.

OBJECTIVES

Primary Objective:

- Is there a relationship between liposomal bupivacaine surgical site injection and postop opioid utilization?

Secondary Objectives:

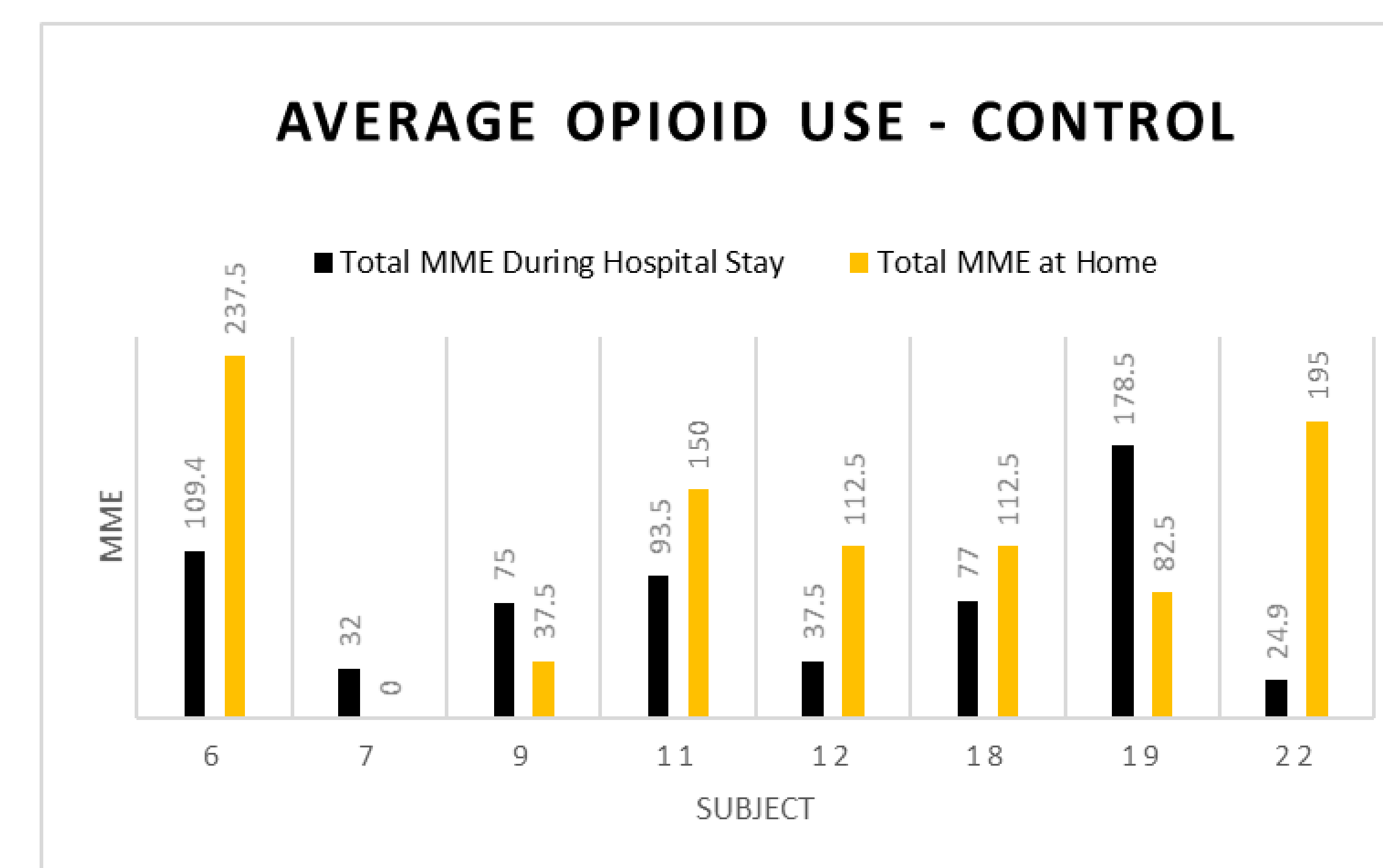
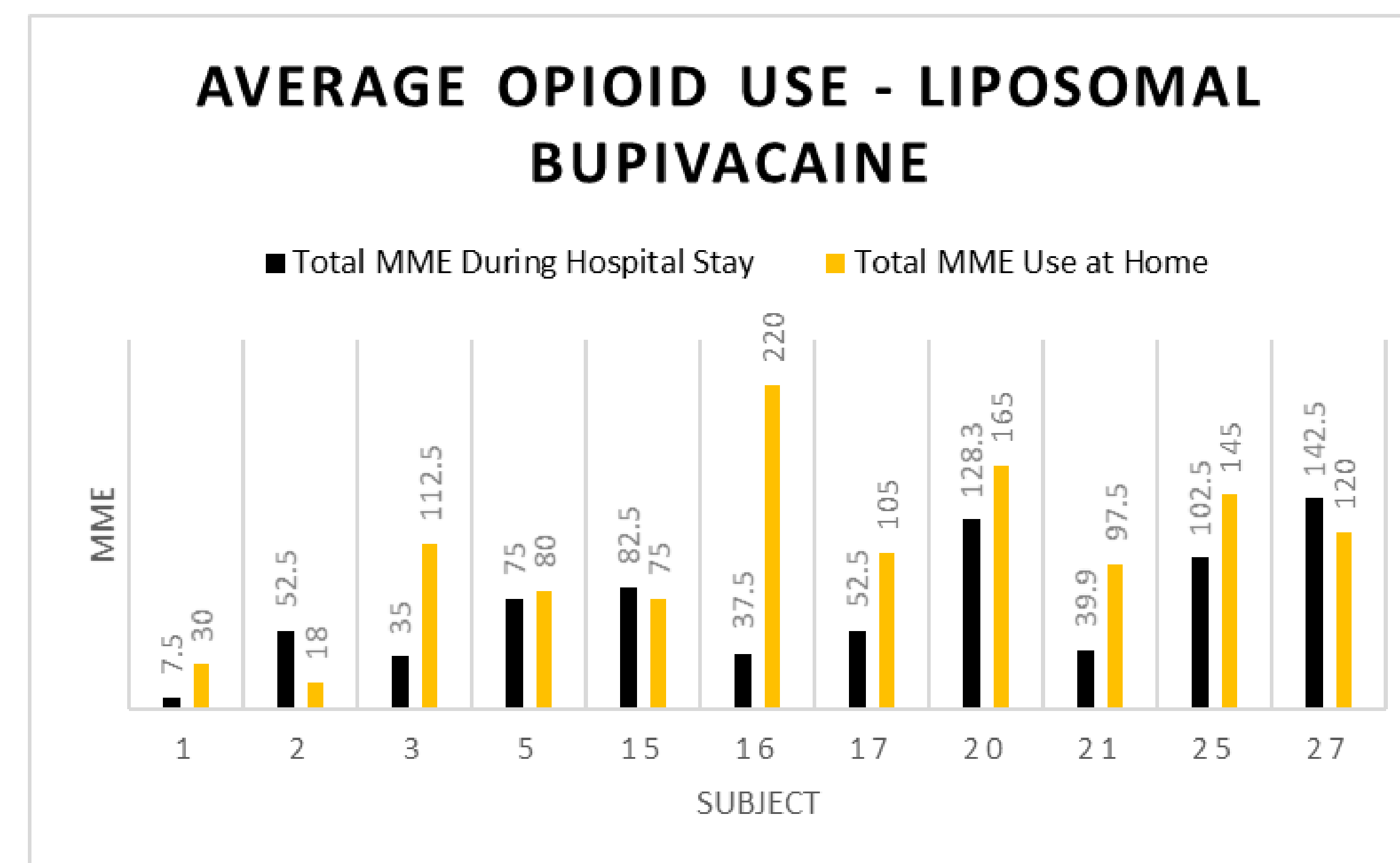
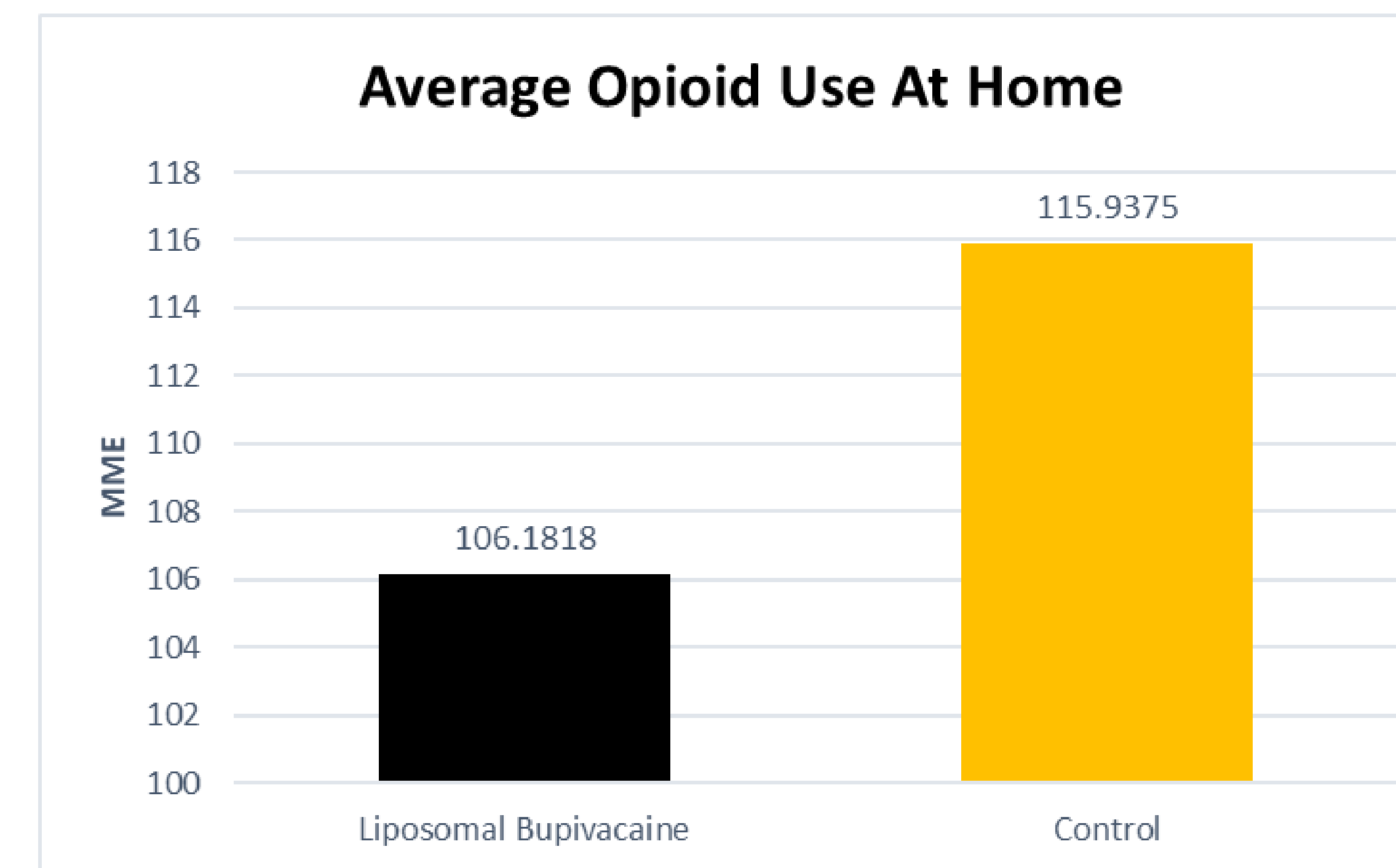
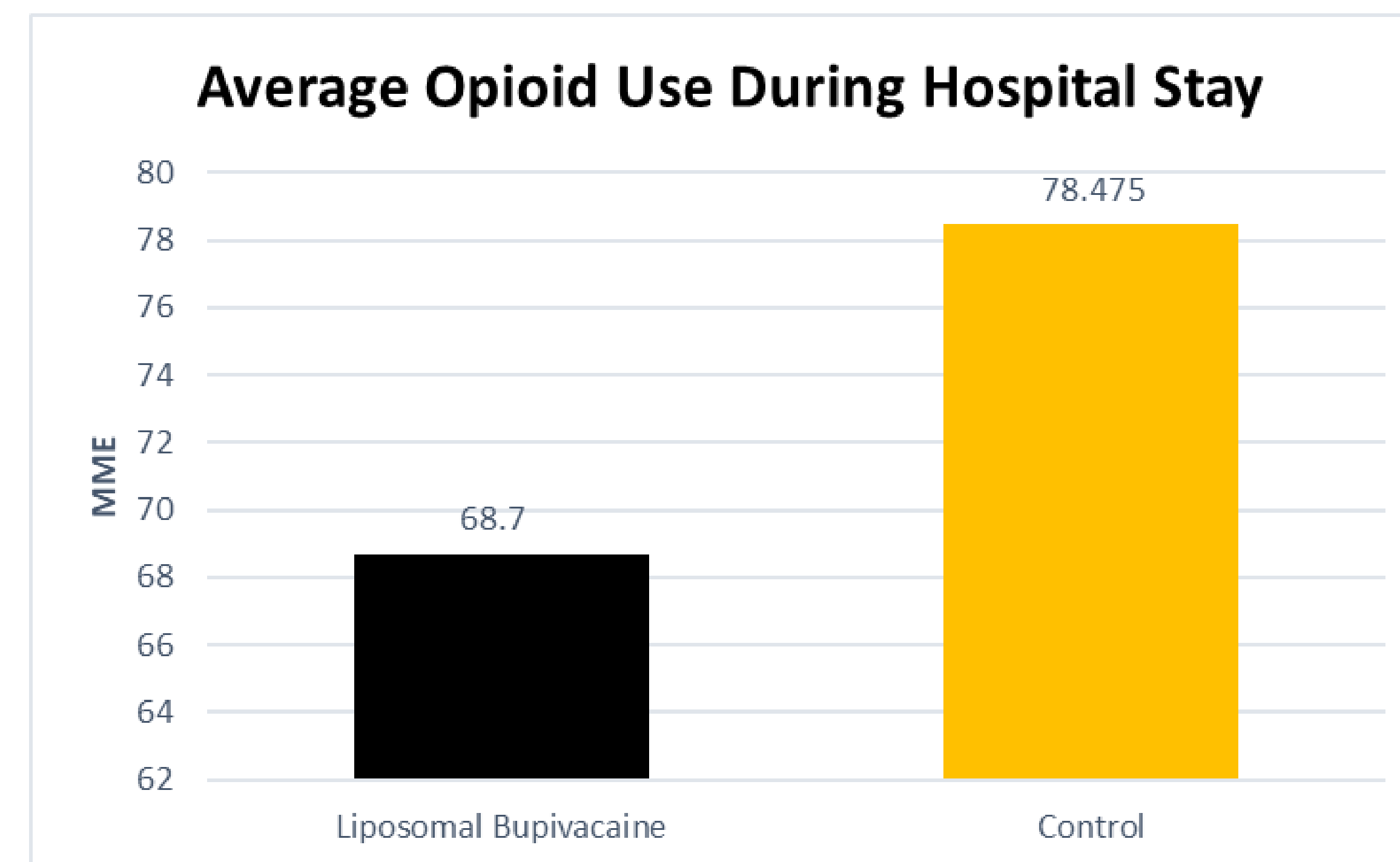
- How does self-reported pain (10-point visual analog pain scale) differ in patients given liposomal bupivacaine compared to patients in the control group?
- Is there a difference in length of hospital stay between the liposomal bupivacaine group compared to the control group?

METHODS

This study is a randomized controlled trial of patients undergoing isolated lumbar spine procedures using a posterior approach. Patients were randomized to either liposomal bupivacaine or saline injection. Injections were given at the end of the procedure following fascial closure, but prior to superficial closure. For a two-week period following the procedure, patients recorded medications taken and associated pain levels. Opioid use was quantified by post-op day and converted to standard morphine milligram equivalents (MME) for comparison.

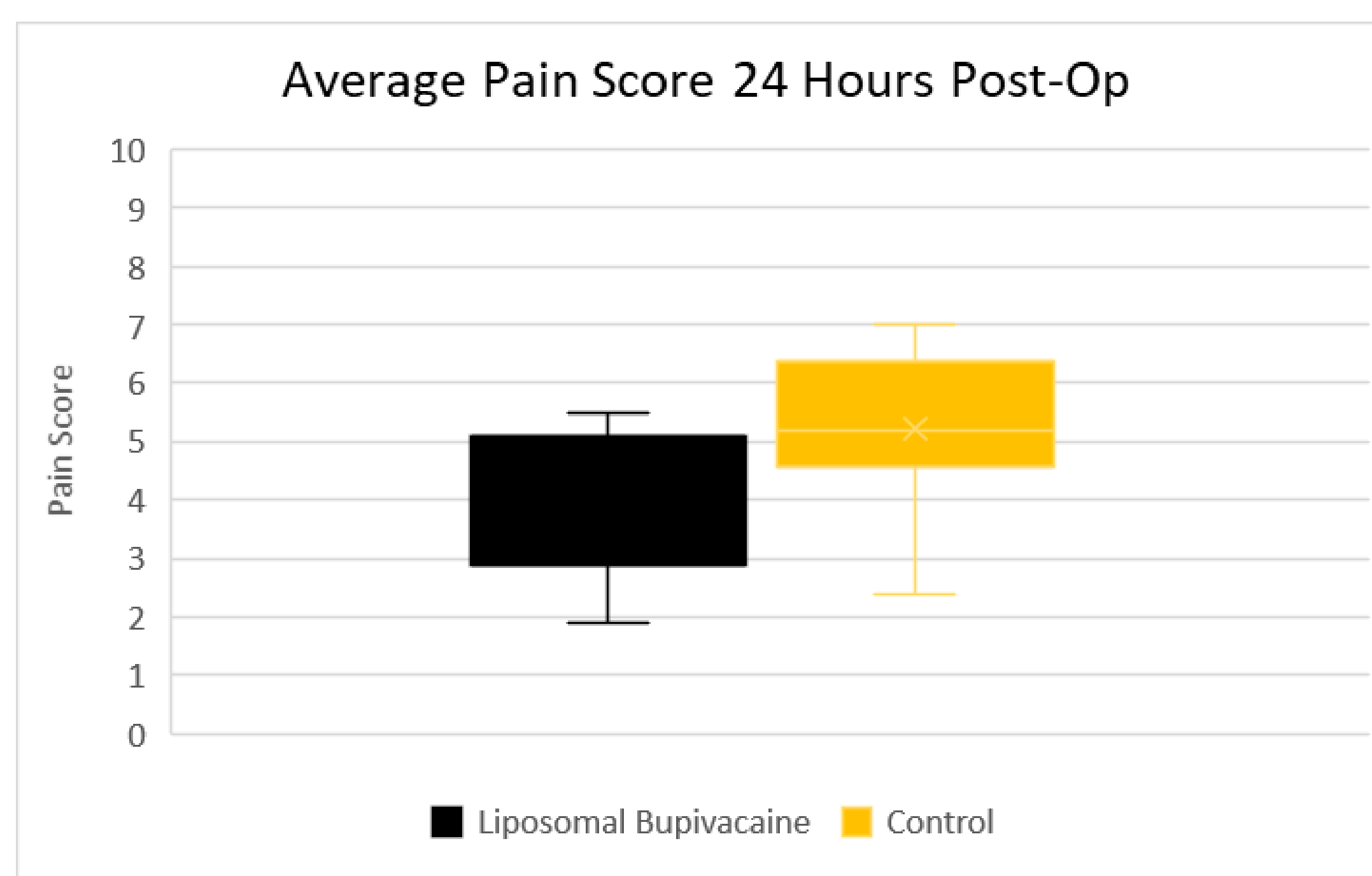
RESULTS

Average Opioid Utilization



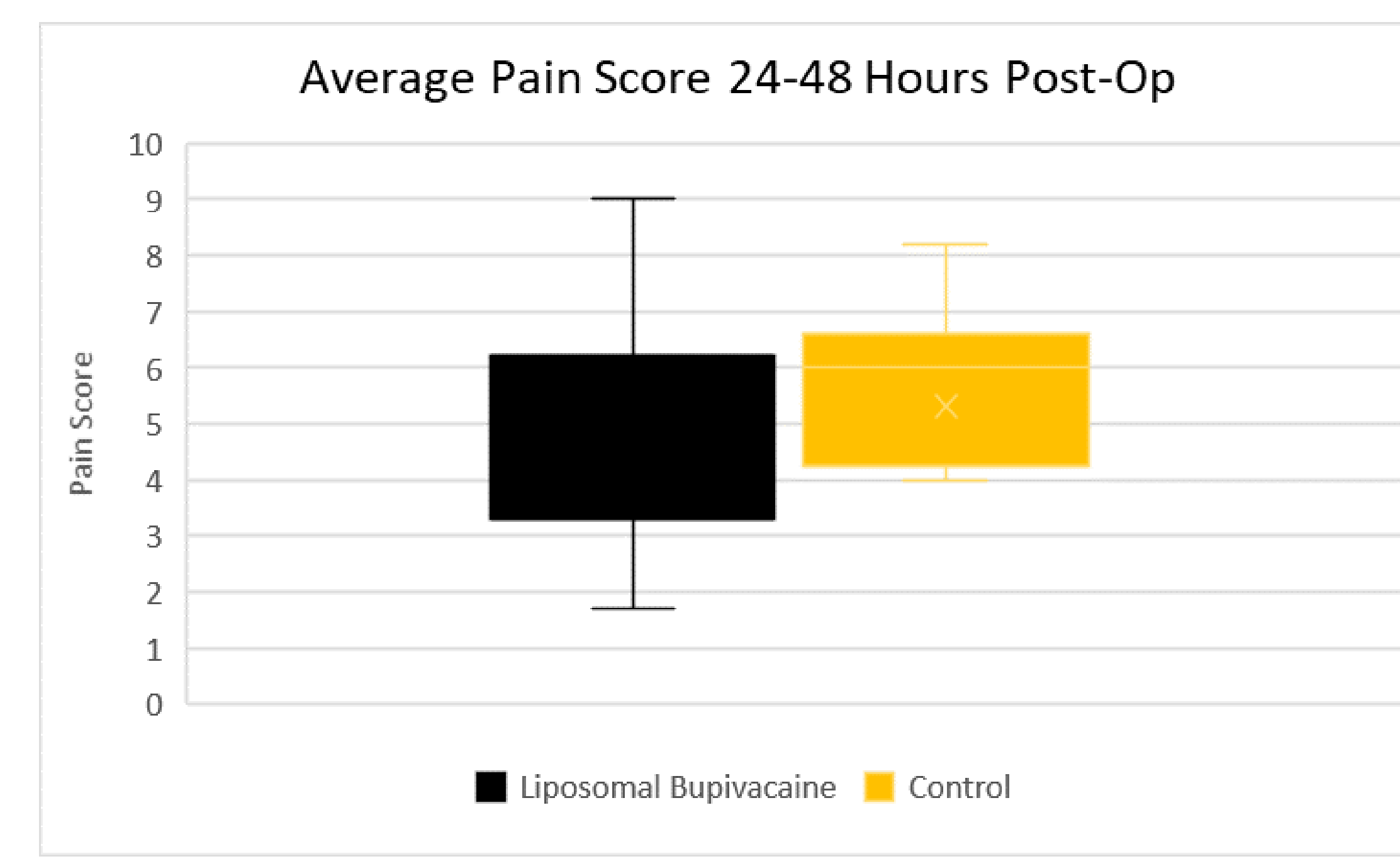
LEGEND: Morphine Milligram Equivalents (MME)

Post-Op Pain Management



Liposomal Bupivacaine Average Pain Score: 3.64

Control Average Pain Score: 5.23



Liposomal Bupivacaine Average Pain Score: 4.75

Control Average Pain Score: 5.31

DISCUSSION

- Post operative opioid use increases risk of developing tolerance and dependence.
- While opioid prescription rates have declined since 2012², prescription opioid overdose rates have stayed steady in Missouri.¹
- Preliminary results from this study illustrate that liposomal bupivacaine may help decrease opioid use for pain management post spinal procedures.
- Average pain scores in the liposomal bupivacaine cohort were lower both 24 hours post-op and 24-48 hours post op.
- Many patients have comorbidities affecting their baseline pain scores, and overall reporting of pain scores is subjective. Both factors can confound the data and should be considered when interpreting the results.
- Future area of interest includes length of hospital stay.

CONCLUSIONS

- Preliminary results illustrate that liposomal bupivacaine has the potential to decrease post operative opioid use and therefore reduce the risk for tolerance and dependence in patients following lumbar spine procedures.
- When liposomal bupivacaine injection was used, patients used less opioids and their average pain levels were better controlled through 48 hours post operative.
- Although current data seems to support our hypothesis, this study is on going and is continuing to enroll patients.
- This study hopes to prompt larger research studies to further investigate the utility of using liposomal bupivacaine post spine procedures.

Acknowledgements

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Sources

- Centers for Disease Control and Prevention. (2021, May 18). 2018-2019 prescription opioid overdose data. Centers for Disease Control and Prevention. Retrieved November 10, 2021
- Centers for Disease Control and Prevention. (2019, August 13). Prescribing practices. Centers for Disease Control and Prevention. Retrieved November 10, 2021
- Centers for Disease Control and Prevention. (2021, March 17). Understanding the epidemic. Centers for Disease Control and Prevention. Retrieved November 10, 2021
- Kosten, T. R., & George, T. P. (2002, July). The neurobiology of opioid dependence: Implications for treatment. Science & practice perspectives. Retrieved November 10, 2021
- Malik, O., Kaye, A. D., Kaye, A., Belani, K., & Urman, R. D. (2017). Emerging roles of liposomal Bupivacaine in anesthesia practice. Journal of anaesthesiology, clinical pharmacology. Retrieved November 10, 2021