

## The Cost-Effectiveness of Post-Operative Ketamine in Chiari Decompression

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### Introduction

In Chiari I patients, post-operative pain and discomfort slow the transition back to the home setting. We sought to reduce hospital length of stay (LOS) and cost as well as narcotics use via a standardized post-operative ketamine infusion protocol.

### Methods

This quality improvement study enrolled 100 consecutive adult patients undergoing Chiari I decompression by a single provider. Fifty-nine patients were placed on a 2-3mg/hr ketamine drip until post-operative day one. This group was compared a group who received ketamine until post-operative day two (19) and patients who did not receive ketamine at all (22). Clinical characteristics, opioid use, length of stay (LOS), and hospitalization costs were assessed.

### Results

The LOS of the short ketamine group was 46.5 hours when compared to the long ketamine group (66.8 hours) and the no ketamine group (56.9 hours) together ( $p < 0.001$ ) as well as when compared individually ( $p = 0.001$  and  $0.004$ ). The relative total hospital cost was 1.17x the mean for the standard pain control group and 1.14x the mean in the long ketamine group (1.09x the mean for the combined two groups). The relative cost was 0.94x the mean for the short ketamine group, for an absolute difference of 20% of the mean cost when comparing the short ketamine protocol to all other patients ( $p < 0.001$ ). Mean morphine milligram equivalents used post-operatively was 148mg in the short ketamine group, 196mg in the long ketamine group, and 187mg in the no ketamine group ( $p=0.65$ ). Only the no ketamine group's LOS was correlated with narcotic use ( $r^2=0.62$ ,  $p=0.003$ ). No adverse events from ketamine were noted.

### Conclusions

Ketamine may reduce narcotic tolerance and potentially decreases side effects. Strategic application of supplementary ketamine appears to be an effective tool to allow for early return home post-operatively, and may substantially reduce medical costs.

### Learning Objectives

- 1) Understand the relationship between hospital costs and length of stay
- 2) Understand the mechanism of pain desensitization with ketamine
- 3) Consider the use of standardized pain regimens to supplement PRN pain control

### References

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