

# Using a Standardized Pain Management Approach Through Regional Anesthesia for Major Limb Amputation Patients

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## Problem Statement

- The Vascular Surgery department at a large academic institution lacked a formalized approach to manage the complex, acute-on-chronic pain experienced by patients undergoing major limb amputation (MLA).
- MLA patients averaged 2,352.2 total morphine milliequivalent (MME), or 144.8 MME daily.
- These patients experienced prolonged hospitalizations with a mean length of stay (LOS) of 21 days.

## Purpose of Project/Goals

### Primary Goal:

- To obtain 100 percent clinician compliance with completing the MLA Regional Anesthesia (RA) Checklist within the daily progress note.

### Secondary Goals:

- 100 percent Provider Input Survey compliance.
- RA use in 100 percent of eligible MLA patients.

### Other aims:

- Reduce total MME required to adequately manage the MLA patient's pain.
- Reduce LOS and improve Numeric Pain Score (NPS) reports by MLA patients.

## Methods

- The team lead provided in-person, electronic, and printed education pertaining to the formalized approach to 22 clinicians managing MLA patients at an academic tertiary hospital center in Maryland.
- Providers assessed NPS at time of MLA consent.
- The clinician requested the pain service provide RA for patients with NPS of four or higher.
- The provider input an MLA Checklist into the daily progress note (on day of consent) to ensure completion of each step of this process.
- Using a QR code, the clinician completed the Provider Input Survey to identify barriers to successful RA application.
- The project lead audited charts assessing use of MLA Checklist, application of RA, MME, NPS, and LOS.

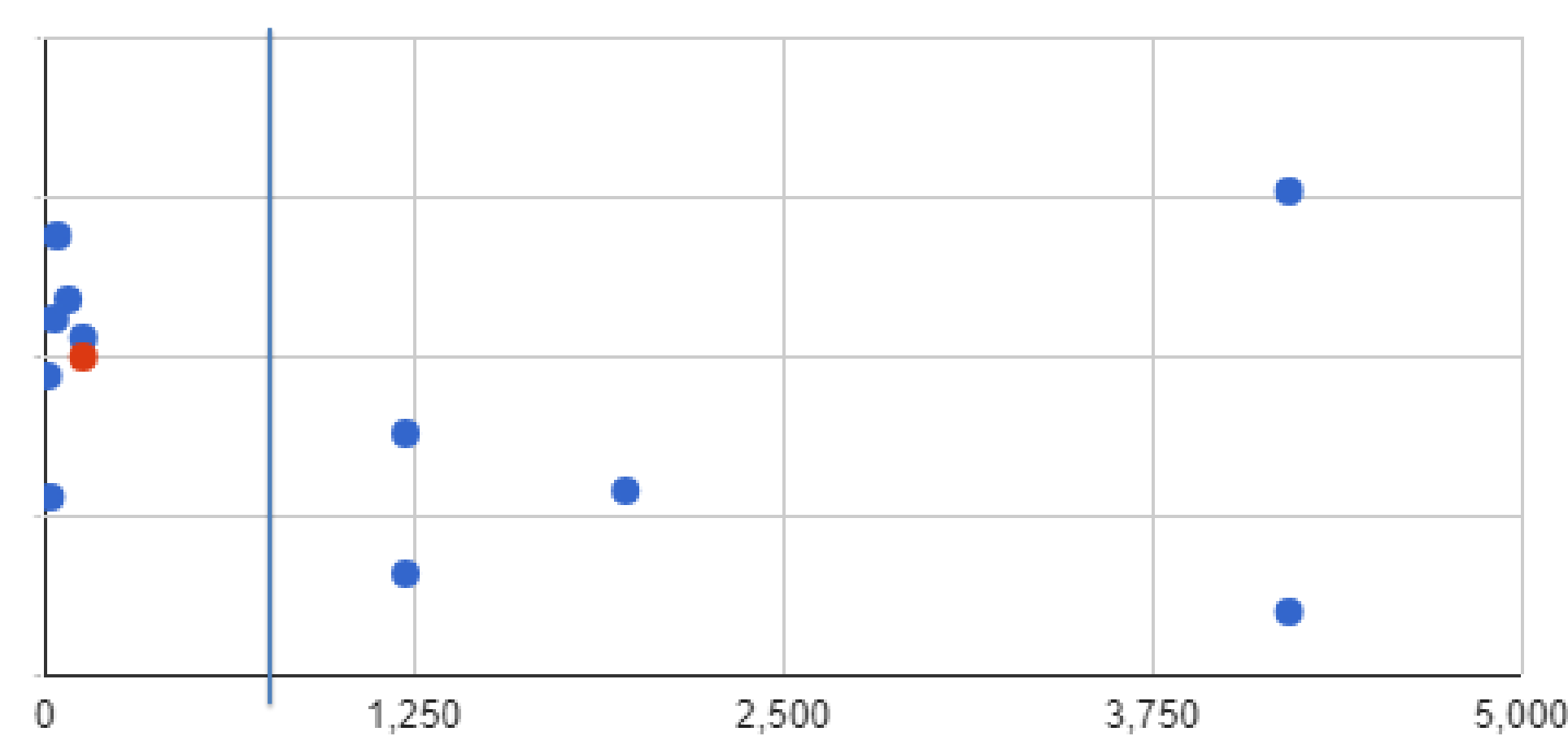


## Results

- 11 MLAs performed during the 15-week period.
- The clinicians maintained a 73% completion of the Provider Input Survey.
- The project team saw a 64% compliance with the MLA Checklist.
- Seven of eleven MLA patients were deemed eligible for RA
- 57% of eligible patients received RA.
- Daily MME increased from 24.4 MME pre-operatively to 32.1 MME post-operatively and averaged 842.5 MME total for hospitalization
- The mean NPS scores improved on post-operative day one but elevated above their pre-procedure NPS mean by discharge.
- The LOS averaged 28.4 days.

## Figures

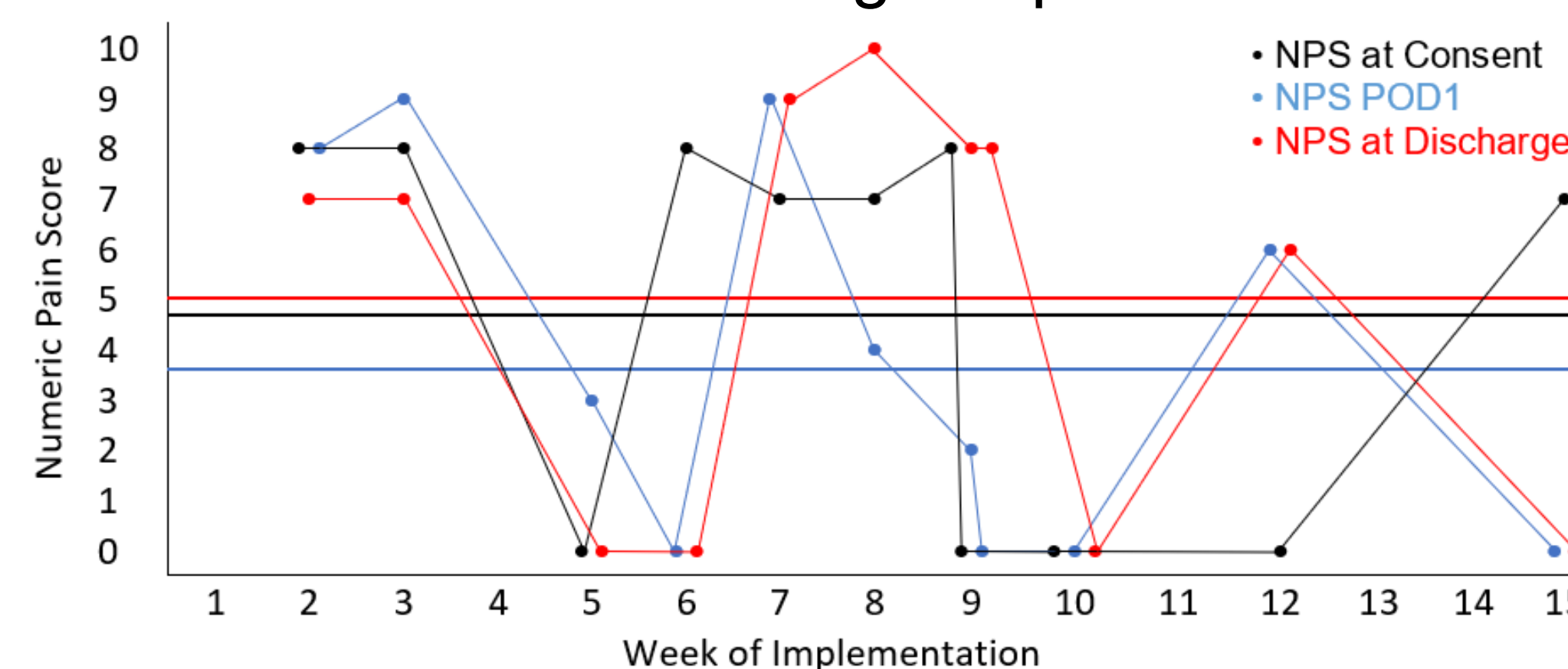
Total MME For Hospitalization



(mean = 842.5 MME)

Application of Regional Anesthesia Among Eligible MLA Patients		
Timing of RA Receipt	Number of Patients	Percentage of Patients
Preoperative Application	1	9.1%
Intraoperative Application	3	27.3%
Post-Operative Application	0	0%
Eligible but didn't Receive RA	3	27.3%
Not Eligible to Receive RA	4	36.3%
<b>TOTAL</b>	<b>n = 11</b>	<b>100%</b>

NPS Trend Through Implementation



Note. MLA patients' NPS improved from the pre-operative period (mean = 4.73) to post-operative day one (mean = 3.46) before increasing on discharge day (mean = 5.0) with the removal of RA.

## Discussion

- Clinicians were moderately compliant with this QI approach falling short of the goals of 100 percent compliance with the MLA Checklist and Provider Input Survey.
- Of eligible MLA patients, 43% did not receive RA as this QI initiative intended.
- As anticipated following a literature review, this project reduced total MME from an average of 2,352.2 MME pre-implementation to 842.5 MME with implementation.
- The NPS improved from pre-operative (mean=4.73) to post-operative day one (mean=3.46) reflecting the expected impact of RA on pain control.
- Upon removal of RA, the discharge NPS rebounded (mean=5) substantially.
- Contrary to the literature, the total LOS increased from 21 days pre-implementation to 28.4 days during this period.

## Conclusions

- This approach provided a framework which improved pain control despite falling short of the desired 100 percent provider compliance.
- For sustainability, continued education on the value of RA in pain management is essential to garner further buy-in.
- Providers must obtain moderate sedation training to allow for bedside RA application.
- A plan for post-RA transition to oral pain control must be developed.
- The team must work to extend RA use to patients undergoing MLA hospital-wide as well as patients presenting with limb threat ischemia for early pain control.

## Bibliography/ Acknowledgements



References

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