

Preventing Pain:

Improving Quality and Efficacy of Analgesia During Lumbar Puncture Procedure in Young Infants

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BACKGROUND

Lumbar puncture is an important diagnostic tool for evaluation of the febrile infant. This procedure is potentially painful for patients, and emotionally distressing to families. The AAP recommends analgesic use during lumbar puncture to minimize distress. Further, performance of this procedure without analgesia in a young infant has potential lasting emotional effects. Oral Sucrose has been advocated as a valuable analgesic for infants undergoing procedures however, recent evidence suggests that it may not offer as effective analgesia as expected.

AIMS

- Assess current attitudes and utilization of analgesics
- Create a system of analgesic administration
- 1+ analgesic use to 100%
- 2+ analgesics use to at least 85%

ACKNOWLEDGEMENTS

We are grateful for the contributions of:

- University of Minnesota Masonic Children's Hospital Division of Emergency Medicine
- ED providers, nursing staff and support staff

This research was supported by the National Institutes of Health's National Center for Advancing Translational Sciences, grant UL1TR002494. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health's National Center for Advancing Translational Sciences

METHODS

1. Pre-intervention electronic survey sent to all ED providers and nursing staff
2. Interventions initiated on January 24, 2018 and data collection concluded on December 31, 2018

Data Collection:

- ICD-10 code for lumbar puncture and CSF culture
- Individual chart review including procedure note and MAR review
- 100 total LP procedures analyzed

Inclusion Criteria:

- Infants <60 days old
- Fever $\geq 100.4^{\circ}\text{F}$ (38°C)
- Underwent LP procedure

INTERVENTIONS

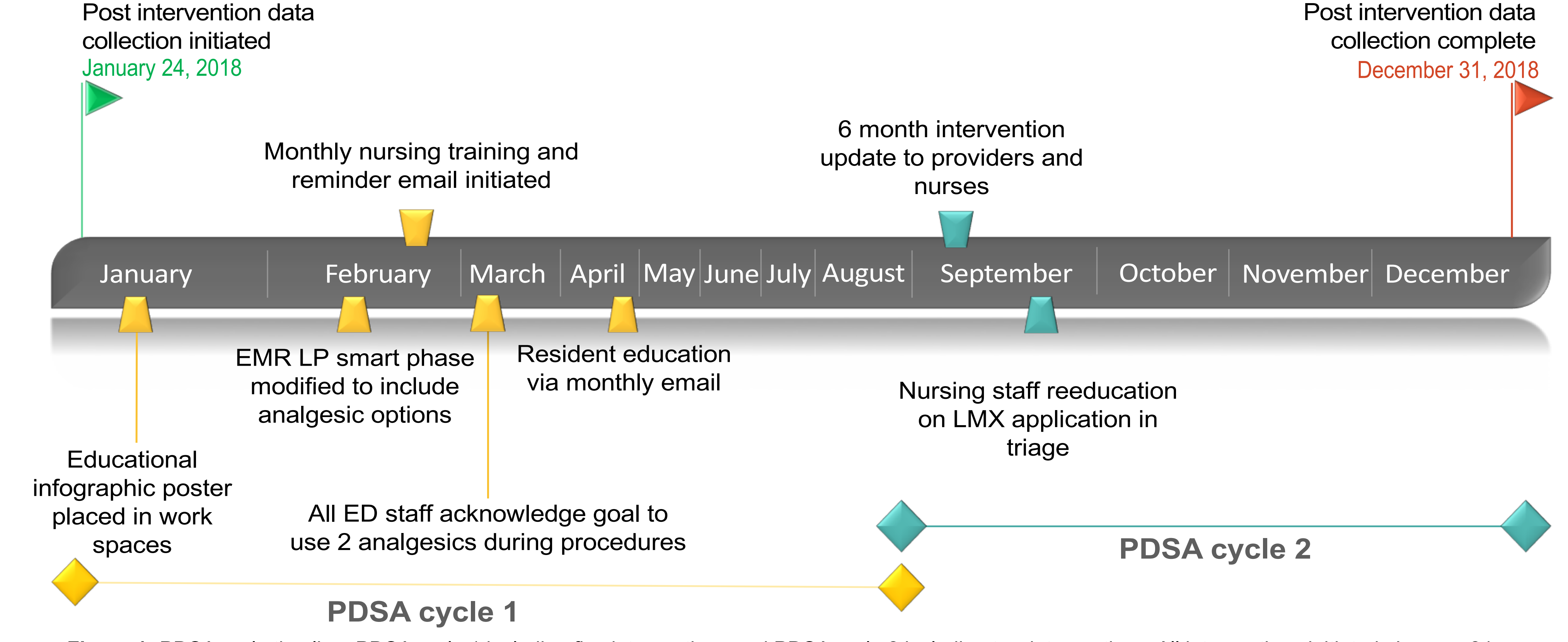


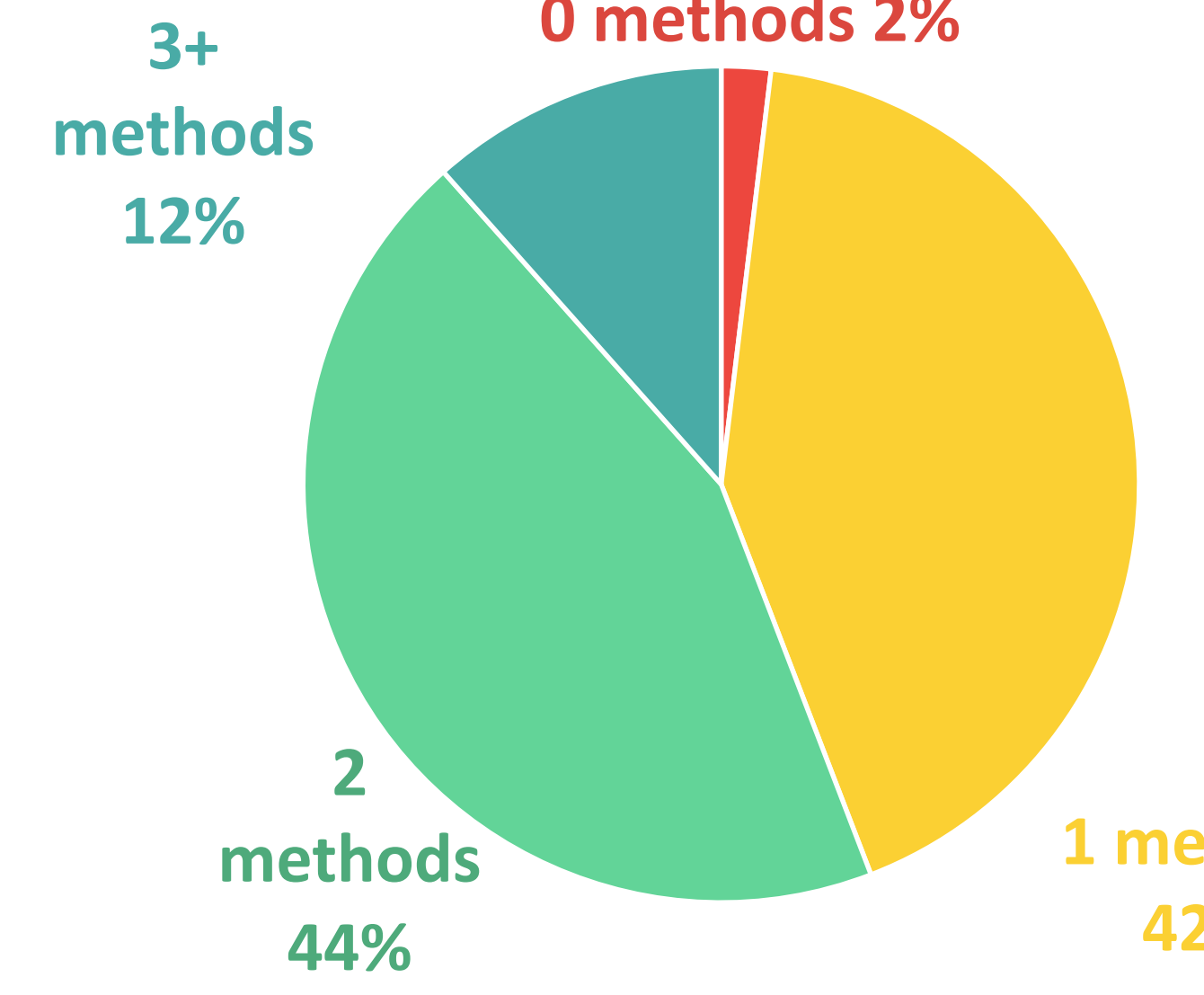
Figure 1: PDSA cycle timeline. PDSA cycle 1 including five interventions and PDSA cycle 2 including two interventions. All interventions initiated January 24, 2018 and data collection was concluded December 31, 2018.

RESULTS

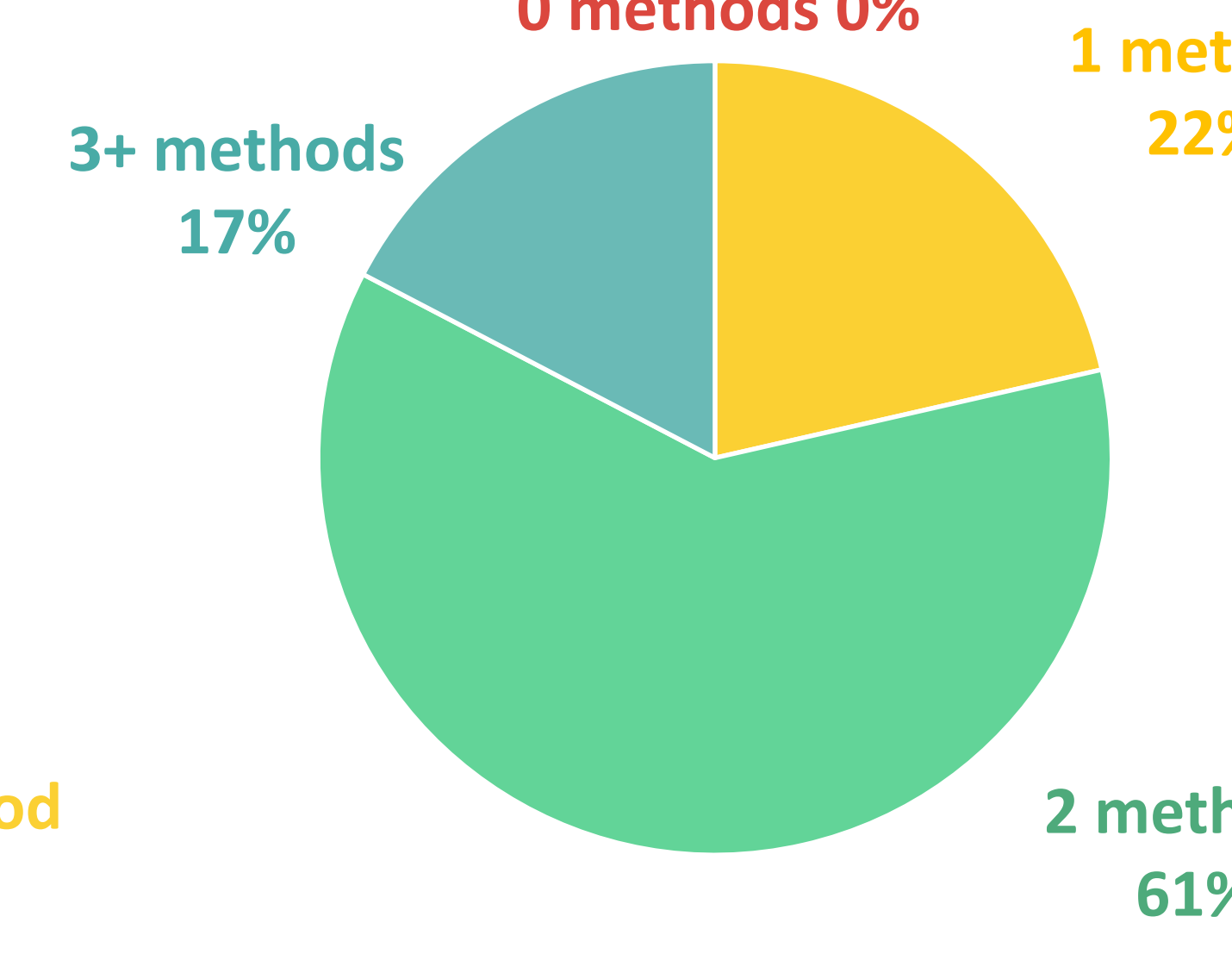
MOST POPULAR METHODS

- Sucrose Solution
- Topical Lidocaine
- Injectable Lidocaine

PRE-INTERVENTION: 2017



6 MONTH UPDATE: 2018



1 YEAR UPDATE: 2018

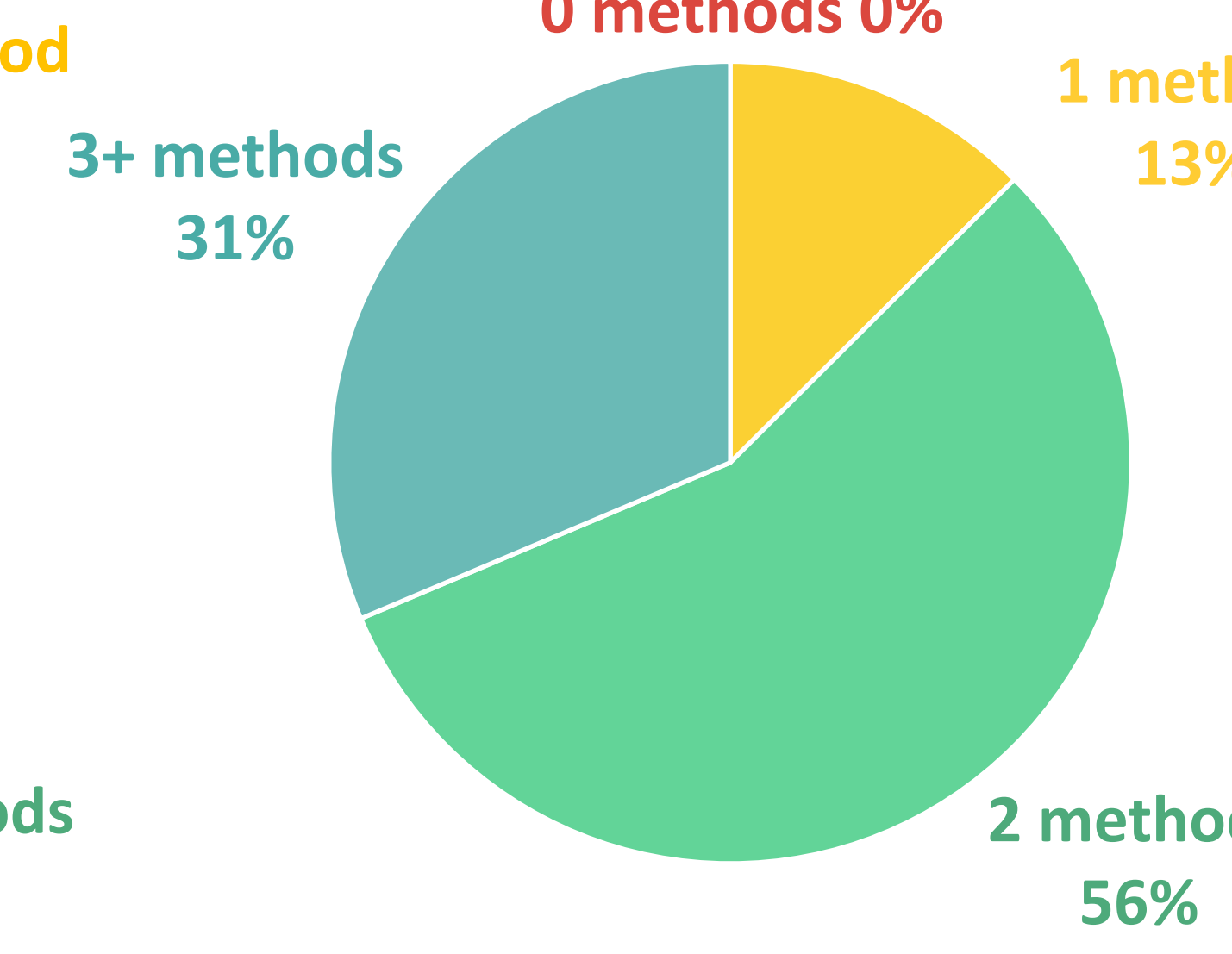


Figure 2: Quantity of analgesic method utilization over the one year intervention period, demonstrating 100% compliance with 1 form of analgesia and a marked increase in the use of 2+ analgesics during LP procedure, meeting project goals of >85% of procedures utilizing 2+ forms.

Topical Lidocaine vs Injectable Lidocaine Use During Procedure

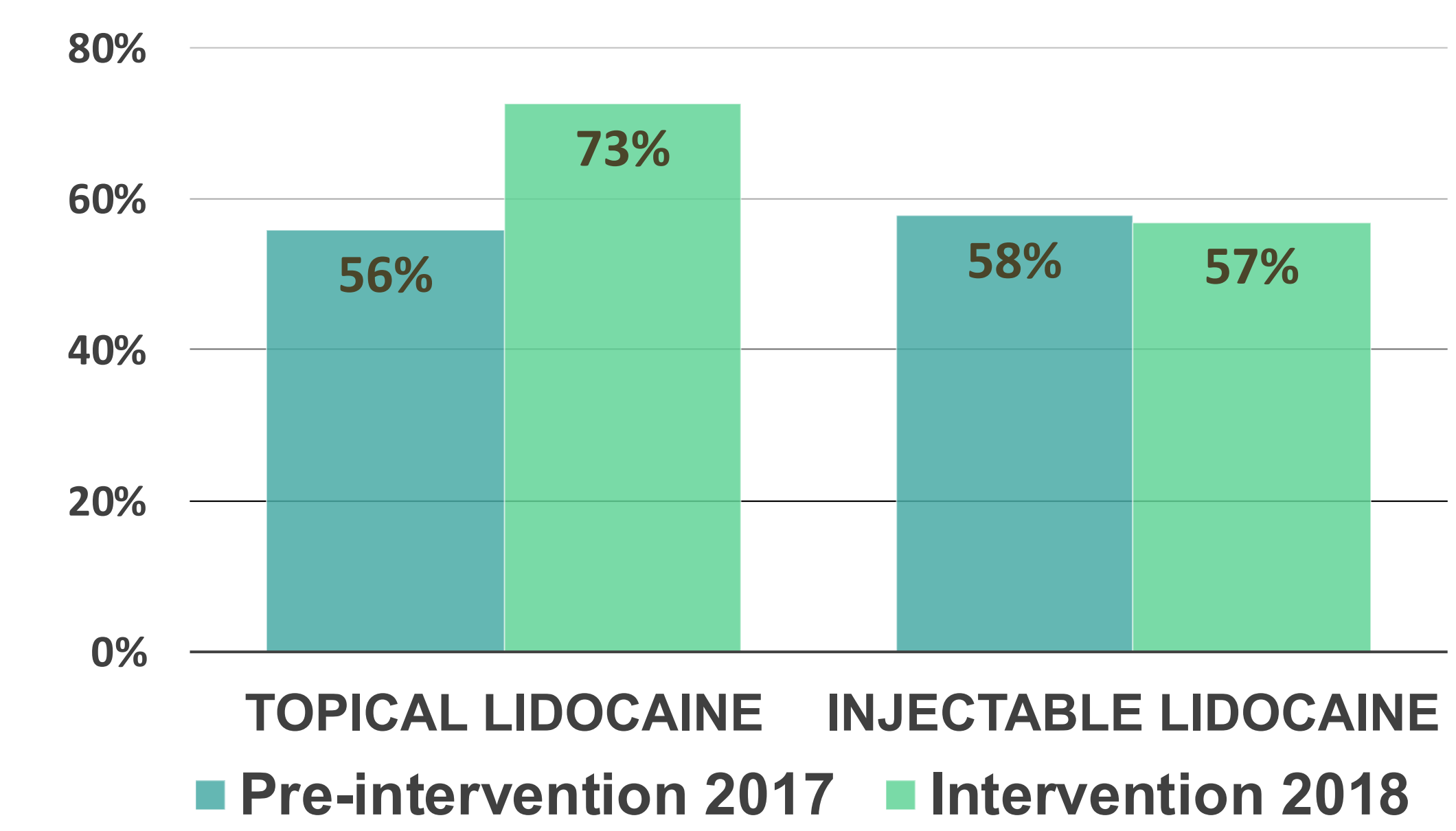


Figure 3: Comparison of topical and injectable lidocaine use in the pre-intervention and intervention group, indicating an increase in topical lidocaine use without a corresponding decrease in injectable lidocaine use.

Procedural Success Rates

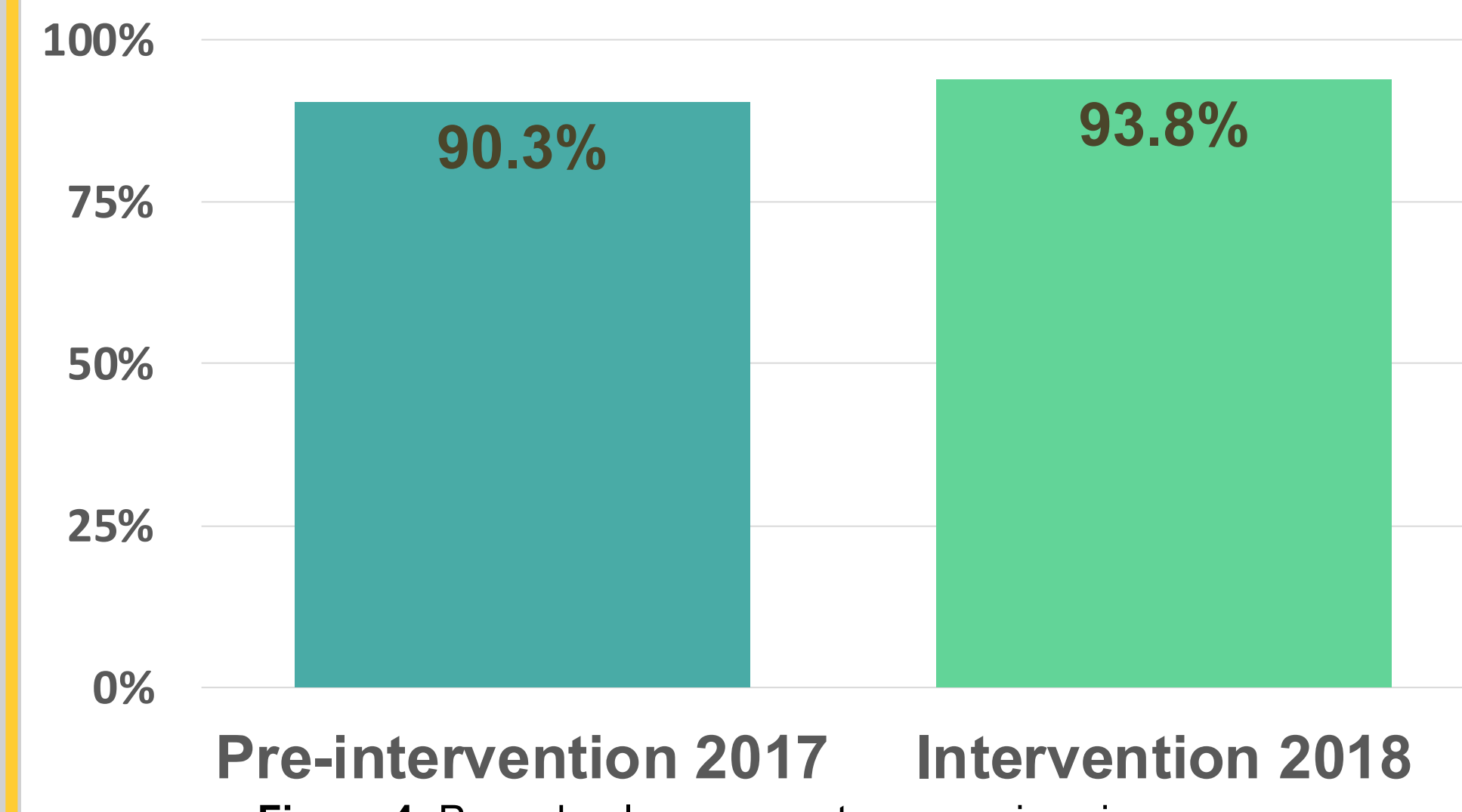


Figure 4: Procedural success rate comparison in pre-intervention and intervention groups, indicating improvement in procedural success by 3.5% in the intervention group.

Procedural Success Rates Per Number of Analgesics

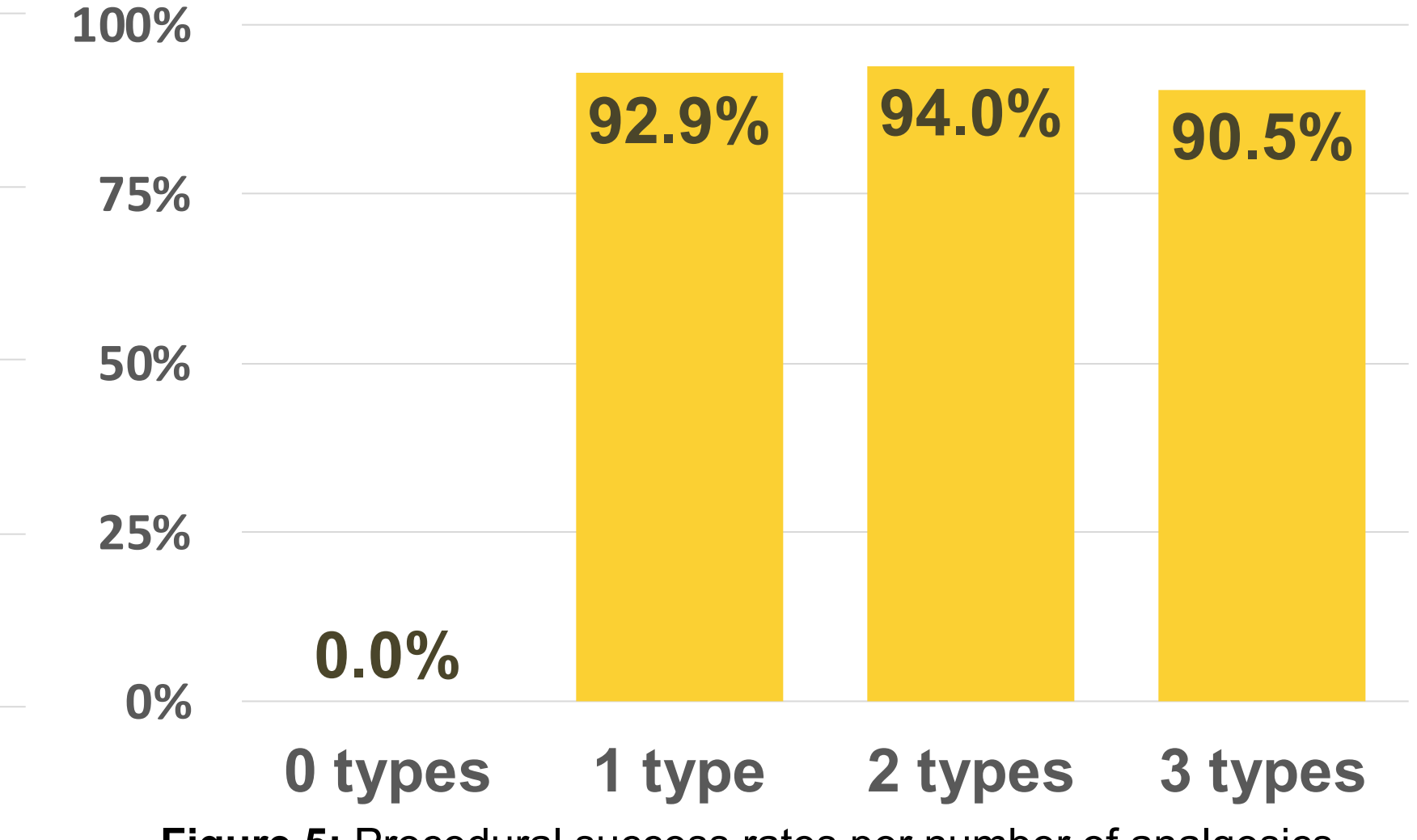


Figure 5: Procedural success rates per number of analgesics used. Pooled pre-intervention and intervention data, indicating 2 methods produced the highest procedural success rate

DISCUSSION

Collaboration and Communication

- Multiple forms and formats of communication
- Multiple education opportunities
- Encouraging pain management discussions
- Limiting single provider burden

Empowering Staff works

- Nursing staff education and empowerment
- Streamlined care process
- Creating an additional intervention without impacting existing interventions

LIMITATIONS

- Chart review based data collection
- Limited sample size limiting significance

FUTURE DIRECTIONS

- Expand into the inpatient context for LP procedures
- Create similar protocols for other semi-invasive procedures