

Parkview Health

## Parkview Health Research Repository

---

Pharmacy

Parkview Research Center

---

2018

### Effect of compliance of enhanced recovery after surgery protocols on pain control at a community medical center

Julia Dickman PharmD

Stacy Clore PharmD, BCPS

Jamie Gaul PharmD, BCPS

Sarah Fitzpatrick PharmD, BCPS

Follow this and additional works at: <https://researchrepository.parkviewhealth.org/pharma>



Part of the [Pharmacy and Pharmaceutical Sciences Commons](#)

---



# Effect of compliance of enhanced recovery after surgery protocols on pain control at a community medical center

Julia Dickman, PharmD; Stacy Clore, PharmD, BCPS; Jamie Gaul, PharmD, BCPS; Sarah Fitzpatrick, PharmD, BCPS  
Parkview Regional Medical Center; Fort Wayne, Indiana

## OBJECTIVE

- Determine the utilization of the Enhanced Recovery After Surgery (ERAS) protocols at Parkview Regional Medical Center (PRMC)
- Assess the impact of both preoperative (pre-op) and postoperative (post-op) ERAS protocols on post-op pain management and nausea and vomiting in comparison to utilization of only pre-op or only post-op ERAS protocols.

## BACKGROUND

- ERAS is a comprehensive multimodal perioperative care pathway to promote early recovery from major surgery.<sup>1</sup>
- Goals of ERAS include:
  - Decreasing post-op complications [pain and post-op nausea and vomiting (PONV)]<sup>1-5</sup>
  - Decreasing length of stay and subsequently total cost<sup>3</sup>
- Medication components of ERAS<sup>1-5</sup>
  - Scheduled doses of a non-opioid multi-modal pain medications
  - Scheduled antiemetic to decrease PONV
- Previous studies have shown that multimodal pain approaches and scheduled preemptive dosing of analgesics and antiemetics decrease pain, PONV, and length of stay,<sup>1-5</sup> and increased compliance results in increased positive outcomes.<sup>5</sup>
- ERAS at PRMC
  - Implemented pre-op and post-op ERAS order sets on August 1, 2017

## METHODS

### Study Design

- Retrospective chart review
- Timeline: September 1, 2017 – August 31, 2018

Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"><li>Adults ≥ 18 years old</li><li>Admitted to PRMC</li><li>Received at least one medication from an ERAS order set</li></ul>	<ul style="list-style-type: none"><li>Patients that received<ul style="list-style-type: none"><li>Patient controlled analgesia (PCA) for pain control post-operatively</li><li>Nerve blocks</li><li>Epidurals</li></ul></li><li>Opioid tolerant patients [≥60 oral morphine equivalents (OME)/day] prior to admission</li><li>Multiple surgeries during admission</li></ul>

### Primary Endpoint

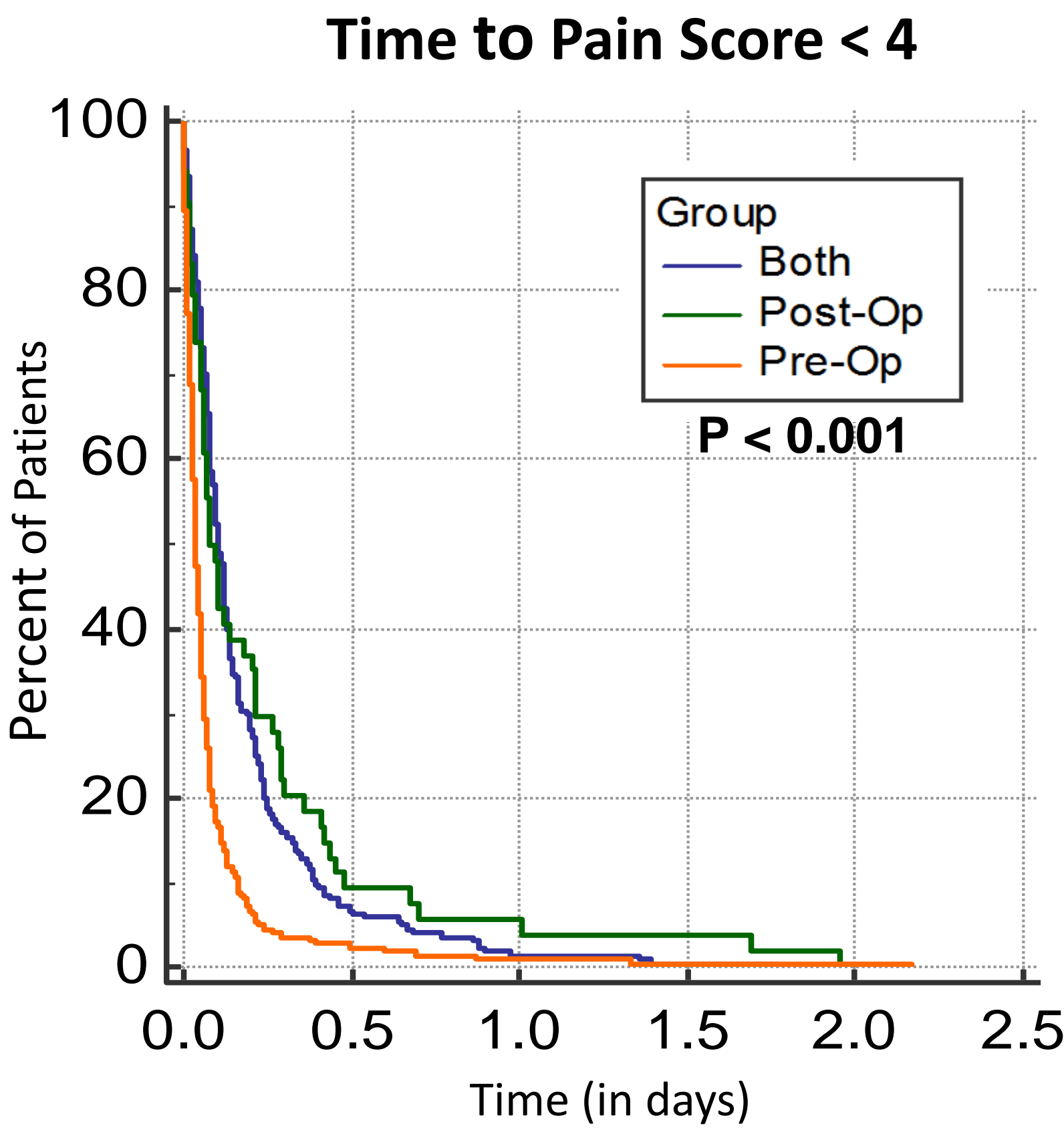
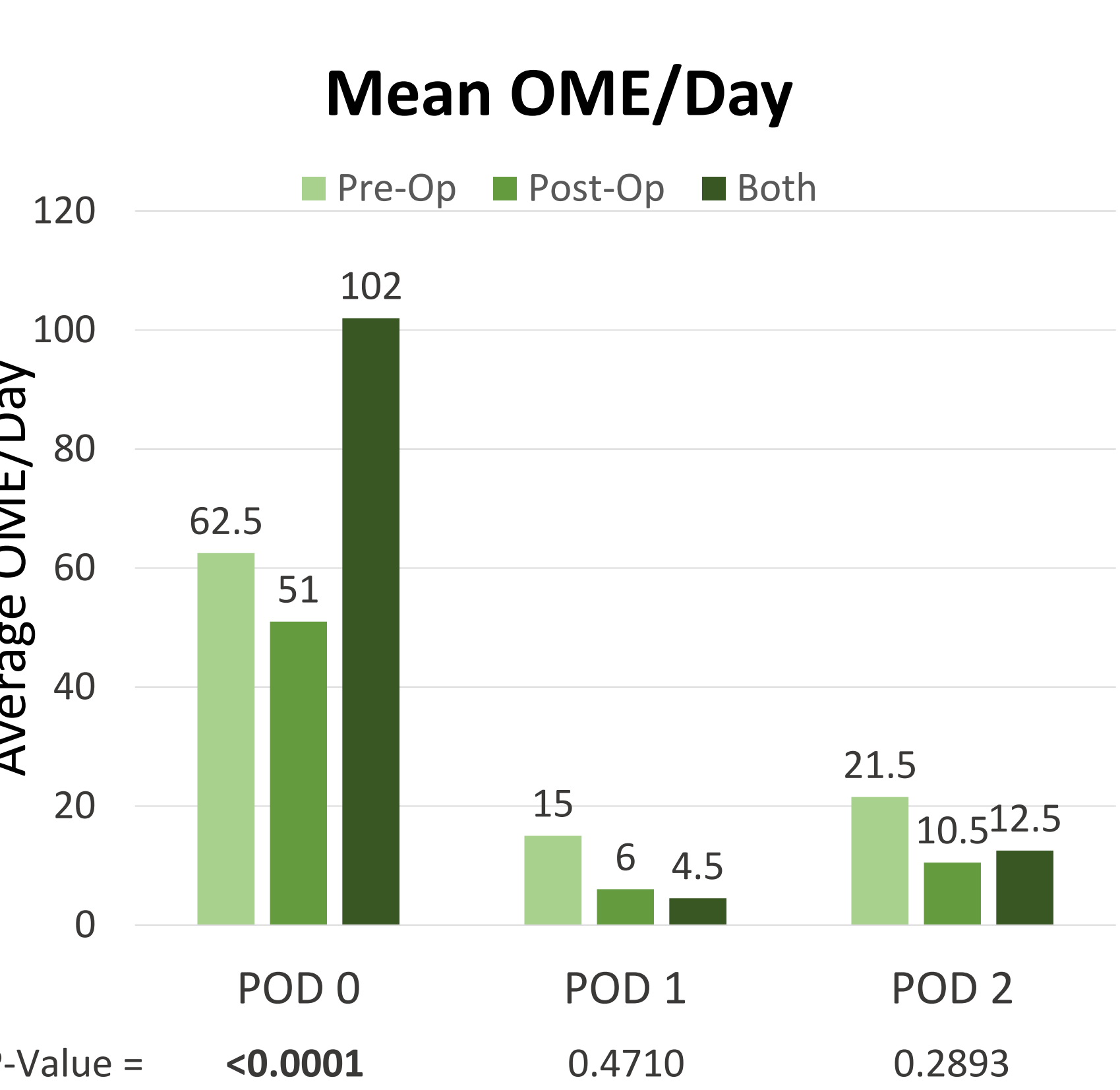
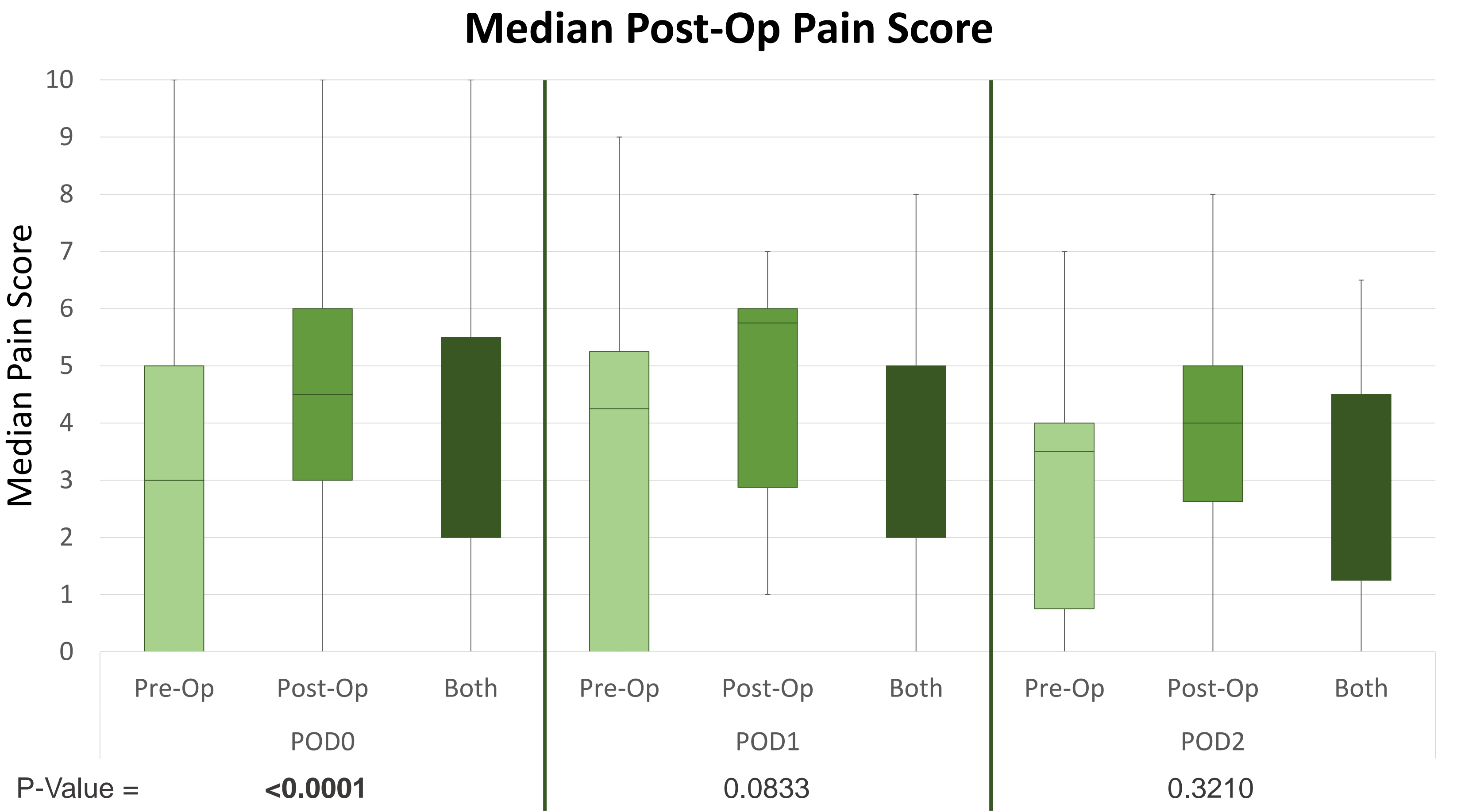
- Difference in median pain scores on post-operative day (POD) 0, 1, and 2

### Secondary Endpoints

- Difference in OME/day administered on POD 0, 1, and 2
- Time to pain score < 4
- Number of rescue as needed (PRN) pain medications administered on POD 0, 1, and 2
- Number of post-operative emesis recorded on POD 0, 1, and 2
- Number of PRN anti-emetics administered

## RESULTS

Baseline Characteristics			
Characteristics	Pre-op Only n = 312	Post-op Only n = 74	Both n = 241
Age, years (mean ± SD)	54 ± 16	56 ± 16	56 ± 15
Female, n (%)	301 (96%)	74 (100%)	241 (100%)
Weight, kg (mean ± SD)	85 ± 26	88 ± 27	91 ± 30
Home daily oral morphine equivalents (OME) (mean ± SD)	1.83 ± 7.43	3.23 ± 8.27	1.69 ± 6.52
Surgical Service			
Gynecology	193 (62.1%)	66 (91.7%)	238 (99.2%)
General	97 (31.2%)	-	1 (0.4%)
Colon Rectal	16 (5.1%)	-	-
Gynecology Oncology	1 (0.3%)	6 (8.3%)	1 (0.4%)
Other	5 (1.3%)	-	-
Chronic pain, n (%)	0 (0%)	1 (1%)	5 (2%)
Intra-operative analgesic used, n (%)	113 (36%)	45 (61%)	78 (32%)
Intra-operative antiemetic used, n (%)	253 (81%)	61 (82%)	212 (88%)



## RESULTS

Mean PRN Opioid Doses per Patient				
	Pre-Op	Post-Op	Both	P-Value
POD 0	1.6	3.6	3.2	<b>&lt;0.0001</b>
POD 1	2	1.5	1.4	0.2489
POD 2	2	1.4	1.8	0.5120

Number of Emesis Episodes				
	Pre-Op	Post-Op	Both	P-Value
POD 0	6	4	6	0.3492
POD 1	2	3	7	0.7448
POD 2	0	1	0	0.4003

PRN Antiemetic Doses (Mean ± SD)			
Pre-Op	Post-Op	Both	P-Value
0.1795 ± 0.0523	0.6216 ± 0.1075	0.2241 ± 0.0596	<b>0.001</b>

## DISCUSSION & CONCLUSIONS

- Utilization of pre-operative ERAS order sets decreased post-op pain and opioid usage in the first 24 hours post-op, which is consistent with published literature.
- Increased positive outcomes for patients receiving both order sets was not demonstrated as expected. This may be due to confounders, such as the medications utilized from each order set or the type of surgery, as well as intraoperative medication usage or non-medication components of ERAS.

### Limitations

- Retrospective, chart review nature
- Majority of patients discharged prior to POD 1 and POD 2
- Many patients had an immediate post-op pain score of <4 due to intra-operative analgesia administered
- Only assessed the medication component of ERAS
- Compliance to the entire order set was not taken into account

### Implications of Results

- Further evaluation of the medications utilized and stratification of events based on surgical type must be done in order to validate the use of ERAS order sets at PRMC given the discrepancies between the patients who received both order sets versus those who received just the pre-op order set.
- Further emphasis should be placed on the potential advantages of ordering both pre-op and post-op ERAS order sets to decrease post-op pain.

## REFERENCES

1. ERAS Society [Internet]. Enhanced Recovery After Surgery. ERAS Society 2016. Available from: [erasociety.org](http://erasociety.org)  
2. Lau C, Chamberlain R. Enhanced Recovery After Surgery Programs Improve Patient Outcomes and Recovery: A Meta-analysis. World Journal Of Surgery. 2017 Apr; 41(4): 899-913.  
3. Sarin A, Litonius E, Naidu R, Yost C, Varma M, Lee-lynn C. Successful implementation of an Enhanced Recovery After Surgery program shortens length of stay and improves postoperative pain, and bowel and bladder function after colorectal surgery. BMC Anesthesiology. 2016 Aug 3;161-10.  
4. Carey E, Moulder J. Perioperative Management and Implementation of Enhanced Recovery Programs in Gynecologic Surgery for Benign Indications. Obstetrics & Gynecology. 2018 July;132(1):137-46.  
5. Redziwiak M, Kisilewski M, Wierdak M, et al. Early implementation of enhanced recovery after surgery (ERAS) protocol – compliance improves outcomes: a prospective cohort study. International Journal of Surgery. 2015 July 29;21(2015):75-81.  
Special thanks to Sarah Ferrell, PharmD for her contributions.

**Disclosure**

The authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation:

Julia Dickman: Nothing to disclose	Stacy Clore: Nothing to disclose
Sarah Fitzpatrick: Nothing to disclose	
Jamie Gaul: Nothing to disclose	

|| | 2018 ASHP Midyear Clinical Meeting / Anaheim, California / Poster 11-307 | |