

## ABSTRACT

### BACKGROUND

It is widely believed that single-agent sedation is associated with a better recovery and safety profile than multi-agent sedation. The goal of this study is to compare recovery time and select complications in patients receiving propofol alone versus a combination of propofol and adjuvant sedatives and analgesics.

### METHODS

We conducted a retrospective cohort study including adults (≥18) undergoing EGD and/or colonoscopy at Mayo Clinic in Jacksonville, Florida between October 1, 2018 through December 31, 2022. Data were retrieved from institutional data warehouses (Mayo Clinic DataMart and Unified Data Platform) that provide a near real-time replica of Mayo Clinic's electronic healthcare record (EHR). Equivalent procedures were reclassified broadly under "EGD", "Colonoscopy", or "Both" following review by two independent investigators, and data was filtered for completeness and procedures of interest.

### RESULTS

Across the study period, 63,663 procedures were identified, of which 28,532 received anesthesia-supported sedation with propofol. 55% of were female and 12% were not Caucasian. Average patient age was 58 (SD 15.8), median age was 61 (IQR 49-70), and average ASA Score was 2.58.

Mean PACU LOS was 31.71, 32.63, and 33.31 minutes among patients receiving only Propofol while undergoing EGD, COL, and Combined procedures, respectively. This was comparable to 35.06, 39.95, 34.82 for adjuvant fentanyl; 33.13, 45.78, 36.09 for midazolam; 30.11, 31.34, 31.81 for dexmedetomidine; and 36.20, 25.56, 33.76 for multiple adjuvants, respectively. Based on Two-Sample T-test, only adjuvant fentanyl use was associated with a significantly longer PACU LOS than propofol alone, specifically in EGD and COL procedures (p<0.001). All other groups failed to reach statistical significance when compared to propofol alone.

Across all procedure types, patients receiving propofol alone exhibited a 9.4% incidence of bradycardia, 16.0% hypoxia, 0.89% PONV, and 0.40% hospitalization. In patients undergoing EGD, the odds of hypoxia was significantly lower in propofol alone compared to propofol+adjuvants. All other odds ratios did not differ significantly from 1.0.

### CONCLUSIONS

In the setting of anesthesia-supported sedation with propofol, the use of adjuvant medications was not consistently associated with longer recovery times nor higher incidence of post-operative complications. Fentanyl was the only agent that exhibited prolonged PACU LOS in some procedure types. Thus, the use of adjuvant sedatives or analgesics may improve patient comfort without compromising procedural output and clinic flow.

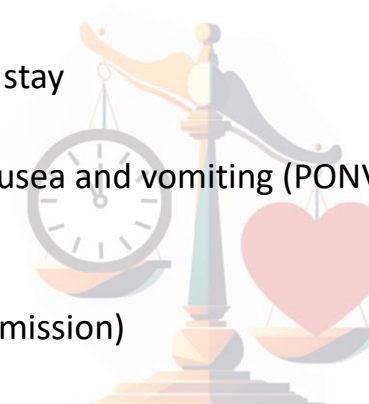
## OBJECTIVES

### TO ADDRESS THE FOLLOWING AREAS OF NEED:

- While the safety and efficacy of propofol sedation is well studied<sup>1</sup>, data on adjuvant dexmedetomidine is relatively sparse.
- Studies have shown that adjuvant narcotics or benzodiazepines with propofol increases cardiopulmonary depression and affects recovery time, but the size and direction of the effects vary by report.<sup>2-5</sup>
- Comparably sized studies were conducted across multiple institutions without standardization of staffing and recovery protocols.<sup>1</sup>
- Comparably sized studies have reported on complication rates, but not recovery times.<sup>1</sup>

## METHODS

- Data Source: Mayo Unified Data Platform
- Records Included/Screened: 28,532/63,663
- Inclusion Criteria
  - Data fields complete (except ASA)
    - demographics, medication usage status, PACU start/end times, complication rates, complications status Propofol used
  - No paralytics used
- Groups: Prop, Dex, Keta, Fent, Benzo, Multiple
- Analysis: RStudio
- Primary outcome: PACU length of stay
- Secondary outcomes
  - Incidence of postoperative nausea and vomiting (PONV)
  - Hypoxemia (SpO<sub>2</sub><90)
  - Bradycardia (HR<60)
  - Escalation of care (hospital admission)



## RESULTS 1

Table 1

Sedation	% Female	% Caucasian	Age (avg)	SD	Age (median)	ASA Score (mean)
Dexmedetomidine	55.16	87.44	50.90	16.59	52.0	2.52
Fentanyl	50.78	88.74	54.05	16.55	57.0	2.54
Ketamine	50.77	84.62	47.20	17.71	48.0	2.80
Midazolam	67.82	89.94	46.61	15.98	47.0	2.45
Multiple	50.00	86.70	44.59	16.51	44.5	2.55
Propofol Alone	55.08	88.01	59.81	15.18	62.0	2.58

## RESULTS 2

FIGURE 1

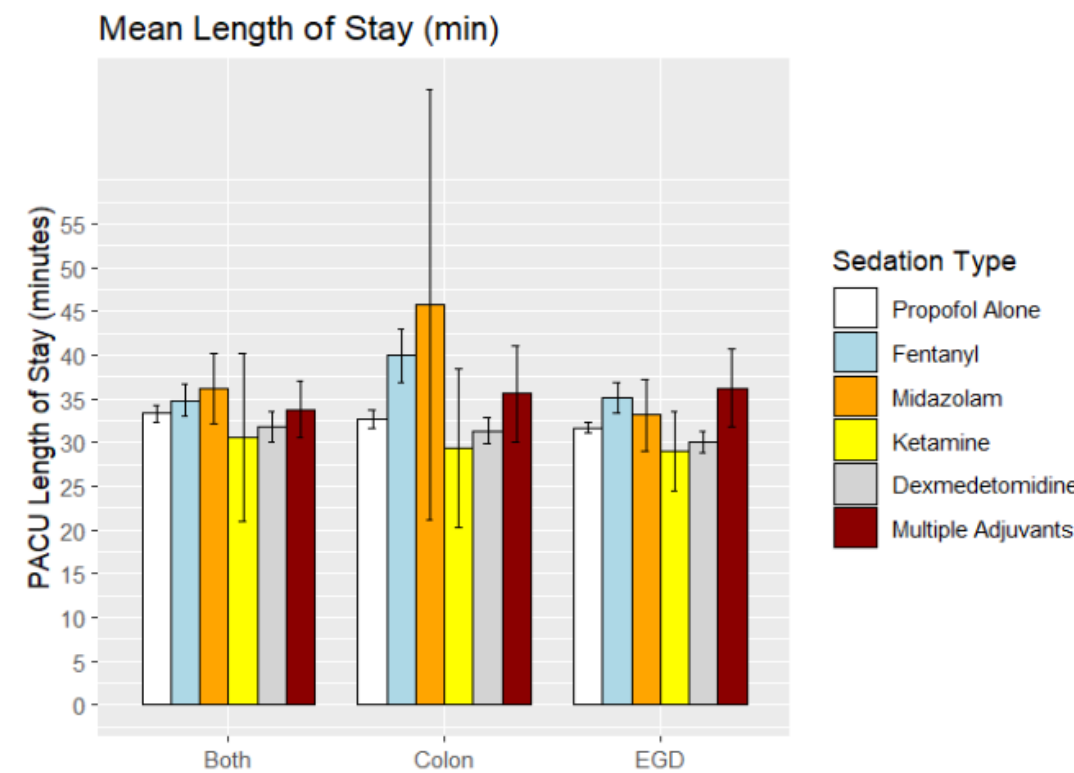


FIGURE 2

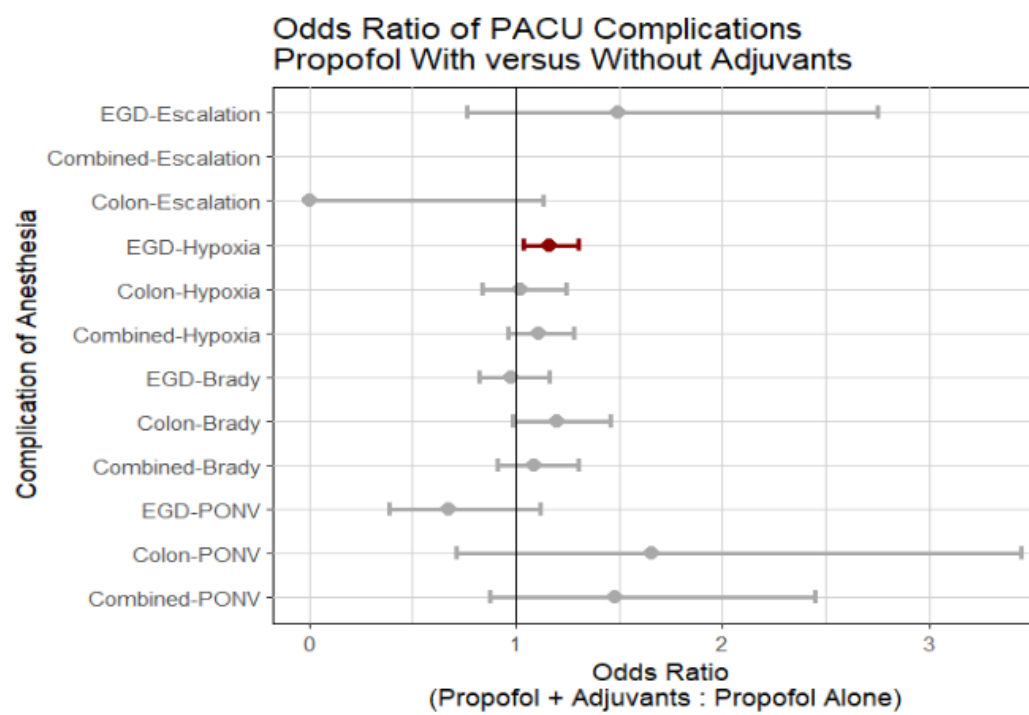
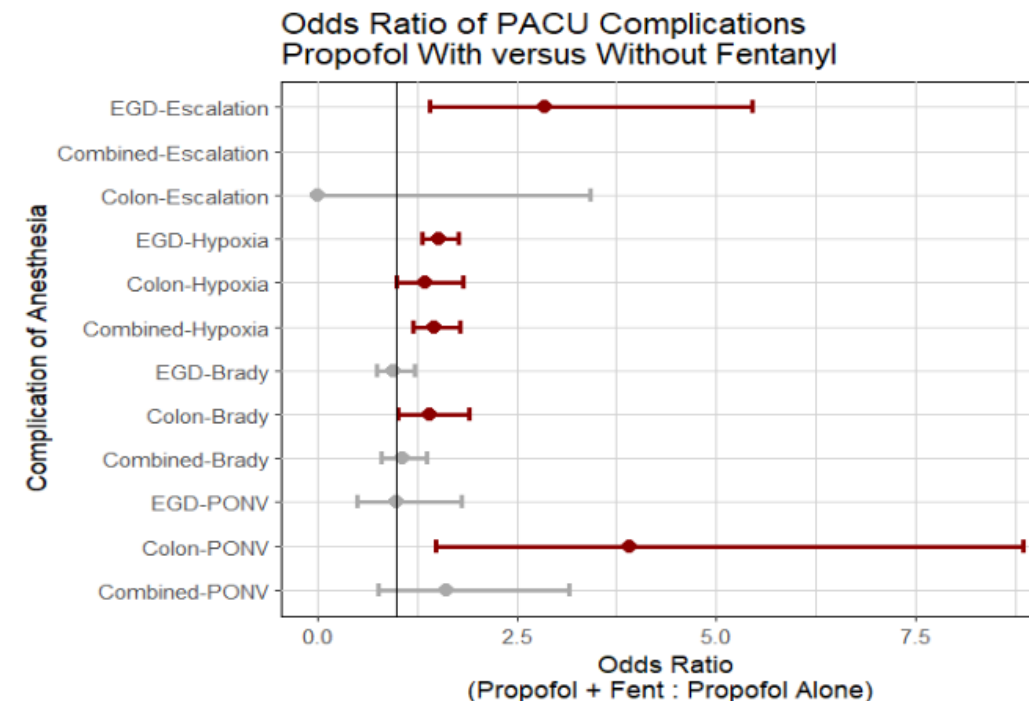


FIGURE 3



## RESULTS 3

Table 2

Comparison	mean 1	mean 2	Δmeans	T-statistic	p value
Prop vs Prop+Fent (EGD)	31.71	35.07	-3.35	-3.65	2.72 x 10 <sup>-4</sup>
Prop vs Prop+Fent (Colon)	32.63	39.95	-7.31	-4.53	7.42 x 10 <sup>-6</sup>
Prop vs Prop+Fent (Both)	33.31	34.82	-1.51	-1.42	0.156
Prop vs Prop+Benzo (EGD)	31.71	33.12	-1.41	-0.68	0.499
Prop vs Prop+Benzo (Colon)	32.63	45.78	-13.15	-1.06	0.292
Prop vs Prop+Benzo (Both)	33.31	36.09	-2.78	-1.34	0.184
Prop vs Prop+Keta (EGD)	31.71	29.08	2.63	1.15	0.254
Prop vs Prop+Keta (Colon)	32.63	29.33	3.30	0.93	0.396
Prop vs Prop+Keta (Both)	33.31	30.64	2.67	0.62	0.550
Prop vs Prop+Dex (EGD)	31.71	30.11	1.61	2.29	2.19 x 10 <sup>-2</sup>
Prop vs Prop+Dex (Colon)	32.63	31.34	1.29	1.38	0.169
Prop vs Prop+Dex (Both)	33.31	31.81	1.50	1.49	0.137
Prop vs Prop+Multi (EGD)	31.71	36.20	-4.49	-1.99	0.0480
Prop vs Prop+Multi (Colon)	32.63	35.56	-2.93	-1.05	0.296
Prop vs Prop+Multi (Both)	33.31	33.76	-0.45	-0.26	0.792

## CONCLUSIONS

- The use of adjuvant medications was NOT consistently associated with longer recovery times
- The use of adjuvant medications was NOT consistently associated with higher incidence of post-operative complications.
- Adjuvant fentanyl exhibited prolonged PACU LOS in some procedure types and increased rates of some complications

## REFERENCES

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