Non-opioid Outpatient Anesthesia for Oral and Maxillofacial Surgery

CALAOMS
Spring 2026

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PGY-3

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Survey of Oral Surgeons

Almost all respondents use fentanyl; a very small minority do not use it at all
Some users selectively skip fentanyl

"It works" (Most common theme)

- "Works well for pain and sedation"
- "Helpful tool"
- "It just works"

Experience/Habit - based justification

Synergy / Polypharmacy

- Reduces benzo/propofol requirement
- "Smaller amounts of multiple agents"

Balanced anesthesia strategy

Analgesia

- Some: improves pain
- Others: rely on local anesthesia for analgesia

No consensus on analgesic role

Selective Use / Risk Awareness

- Avoid in pediatrics (PONV)
- "10% of my cases, primarily older patients"
- Aware of respiratory depression

Adjusted based on patient factors

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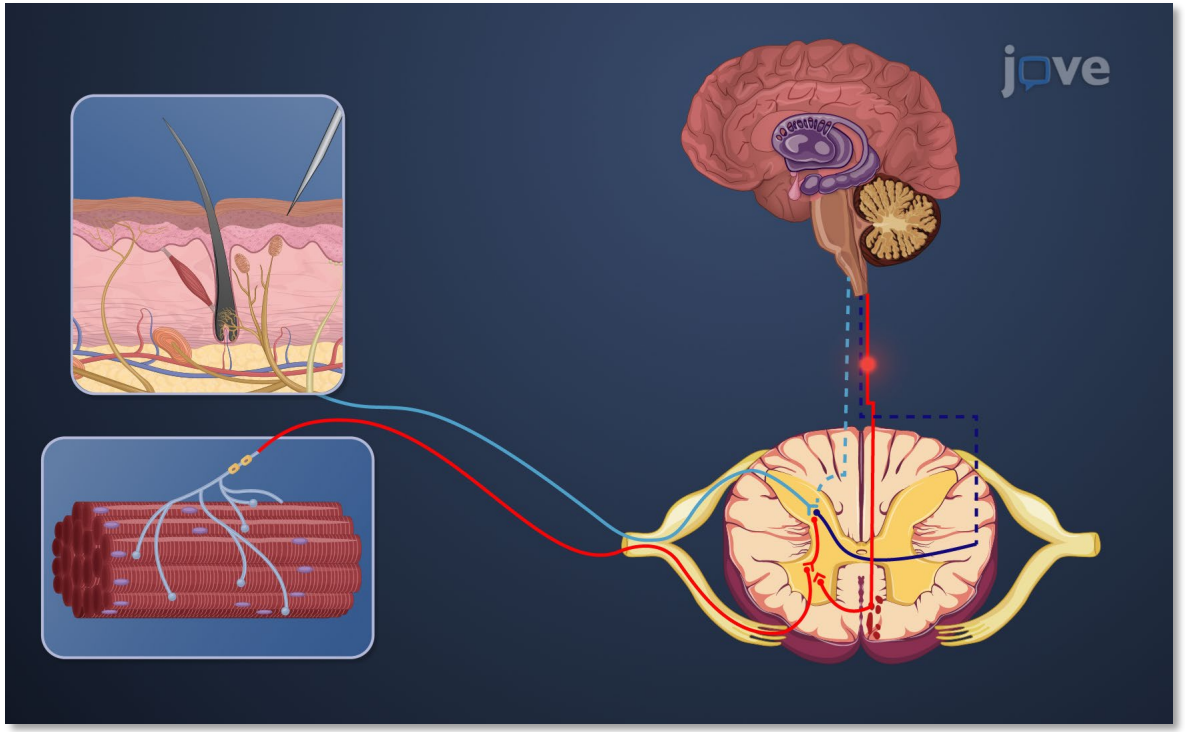
Why Are Opioids Used in Sedation?

- Provide analgesia
- Augment sedation when combined with other agents
- Reduce requirements for sedative-hypnotic agents
- Blunt physiologic response to surgical stimulus
- Fentanyl is frequently the opioid of choice in outpatient anesthesia



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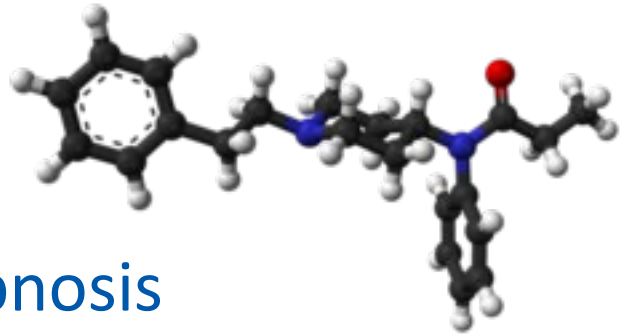
Pharmacologic Role of Fentanyl



- **Rapid onset** (~1 min), **short duration** (10–20 min)
- Potent μ-opioid receptor agonist
- Provides **analgesia and sedation**, not amnesia or hypnosis
- Typically administered in 25–50 mcg increments
- Commonly combined with benzodiazepines or propofol
- Reversible with naloxone

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Dose-Dependent Effects of Fentanyl

0.5–1 mcg/kg	Common initial/titrated procedural sedation range; analgesic effect expected, post op nausea vomiting
1–2 mcg/kg	Greater analgesic effect; increasing risk of respiratory depression, especially with co-sedatives
>2 mcg/kg	Higher-risk range for hypoventilation/apnea depending on patient factors and co-administered agents
Rapid bolus / higher doses	Increased risk of chest wall or glottic rigidity; rare but reported even at lower doses (100mcg)

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Study Rationale

- Systemic opioids are commonly used in procedures where local or regional anesthesia does not fully address nociceptive input
- In oral and maxillofacial surgery, dense local anesthesia is routinely achievable
- Despite this, opioid use remains common in outpatient sedation
- The incremental physiologic benefit of opioids in outpatient procedural sedation and anesthesia is unclear

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Study Objective

To evaluate whether fentanyl improves measurable physiologic stability during outpatient OMFS sedation

Using objective endpoints rather than subjective impressions

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Methods

- Retrospective review of **64 outpatient sedation cases** in a single OMFS clinic
- Cases performed by **two chief residents** in the same clinical environment
- Sedation regimen varied primarily by attending preference
  - One attending routinely avoids fentanyl
- Cases were retrospectively categorized by fentanyl administration:
  - **Fentanyl:** 42 cases
  - **No fentanyl:** 22 cases
- Population: ASA I–II, ages 9–45
- Procedures: Third molar extractions, expose and bonds, biopsies

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Sedation Regimens

Fentanyl (12.5-100mcg)	
Medication	**Patients Receiving**
Midazolam (2–6 mg)	42/42 (100%)
Ketamine (20-50mg)	38/42 (90%)
Propofol (20-140mg)	8/42 (19%)

No Fentanyl	
Medication	**Patients Receiving**
Midazolam (2–6 mg)	22/22 (100%)
Ketamine (20-50mg)	20/22 (91%)
Propofol (20-90mg)	3/22 (14%)

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Outcome Measures

Vital Signs

- Mean Arterial Pressure (MAP)
- Respiratory Rate
- SpO_2
- Heart Rate

Adverse Events

- MAP < 65 mmHg
- RR < 8 breaths/min
- SpO_2 < 92%
- Episodes of post op vomiting

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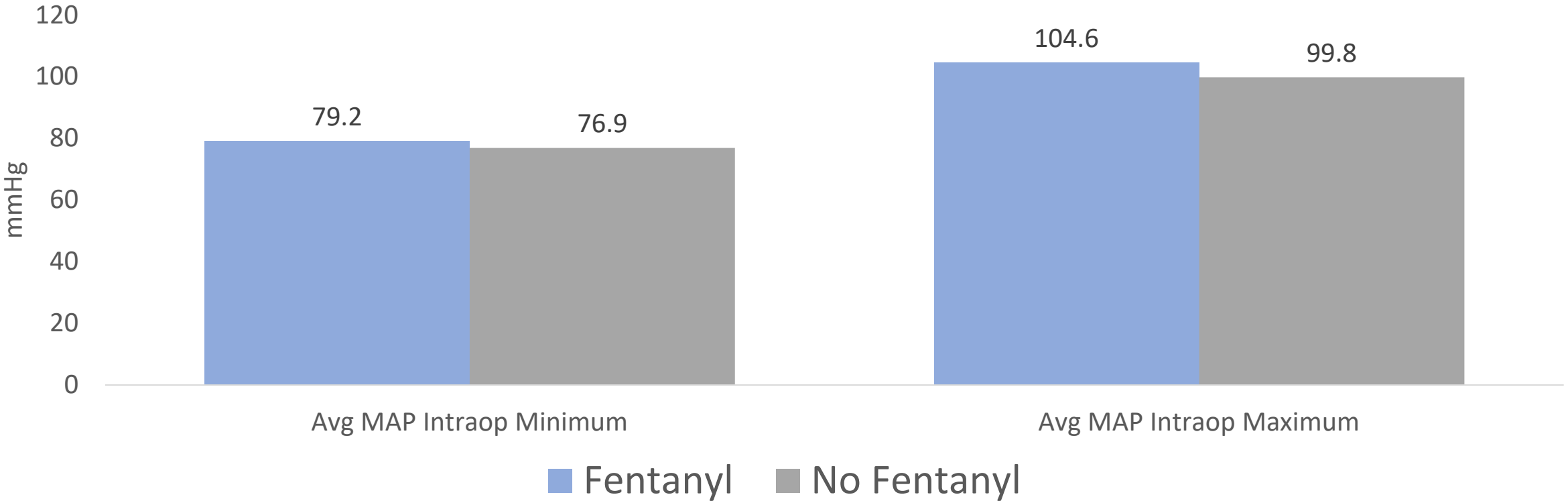
Mean Arterial Pressure



Avg % Change from Baseline		
	MAP Intraop Minimum	MAP Intraop Maximum
Fentanyl	-10.4%	18.5%
No Fentanyl	-10.8%	16.8%

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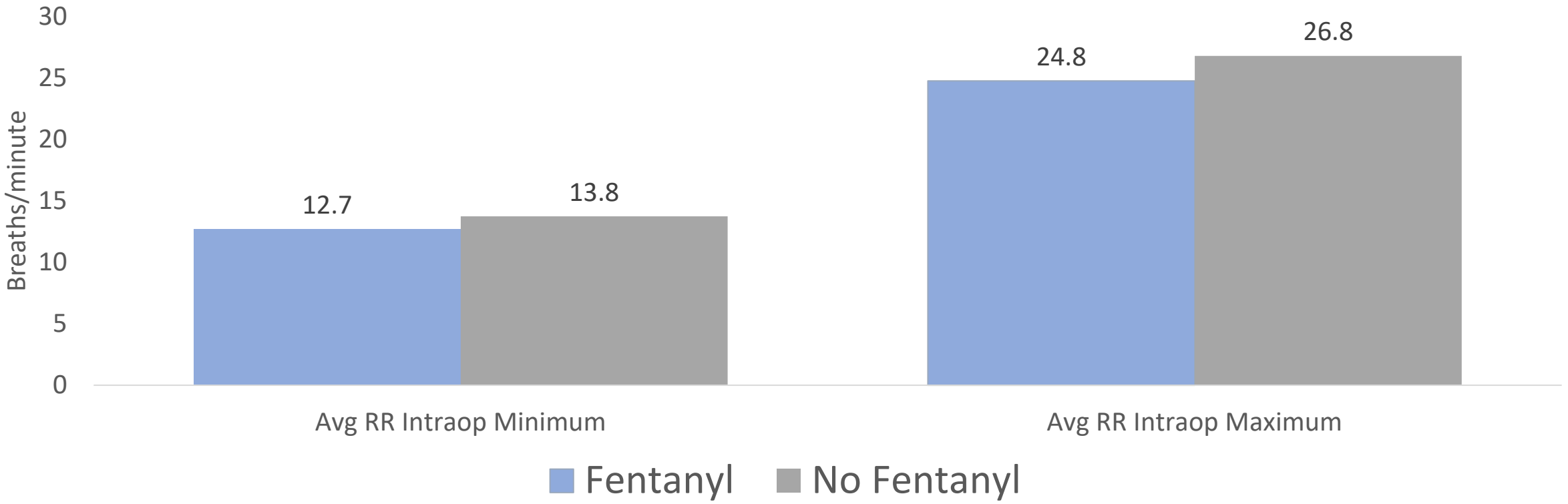
Respiratory Rate



Avg % Change from Baseline		
	RR Intraop Minimum	RR Intraop Maximum
Fentanyl	-21.8%	52.5%
No Fentanyl	-15.2%	65.7%

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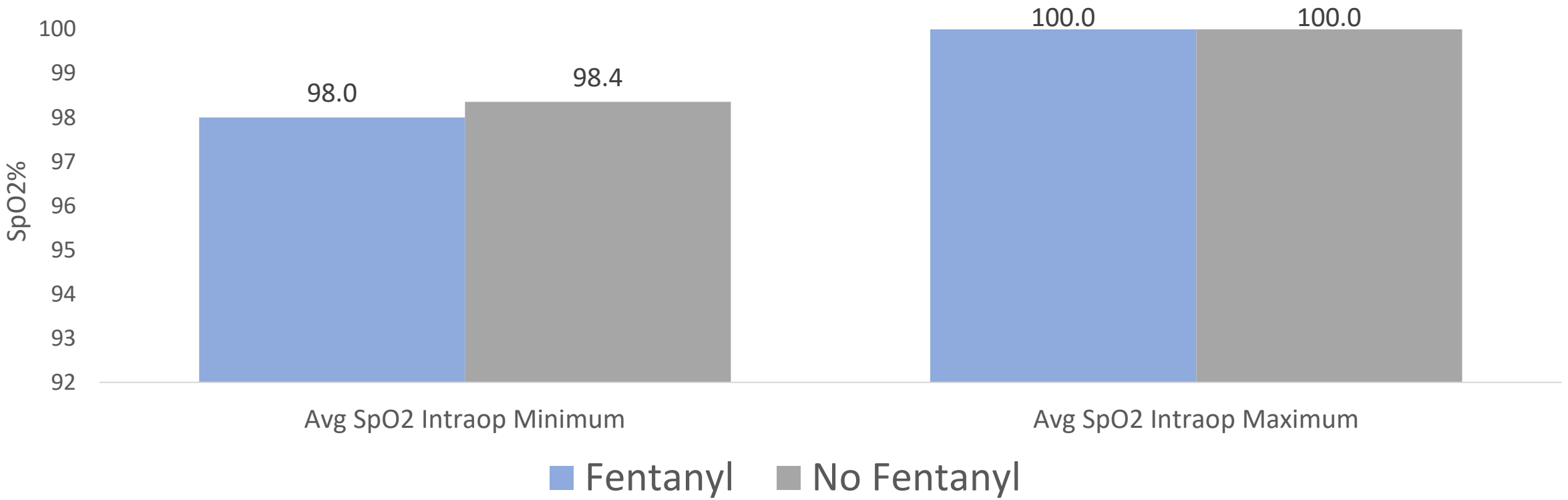
Oxygen Saturation – SpO2



Avg % Change from Baseline		
	SpO_2 Intraop Minimum	SpO_2 Intraop Maximum
Fentanyl	-1.8%	0.2%
No Fentanyl	-1.5%	0.1%

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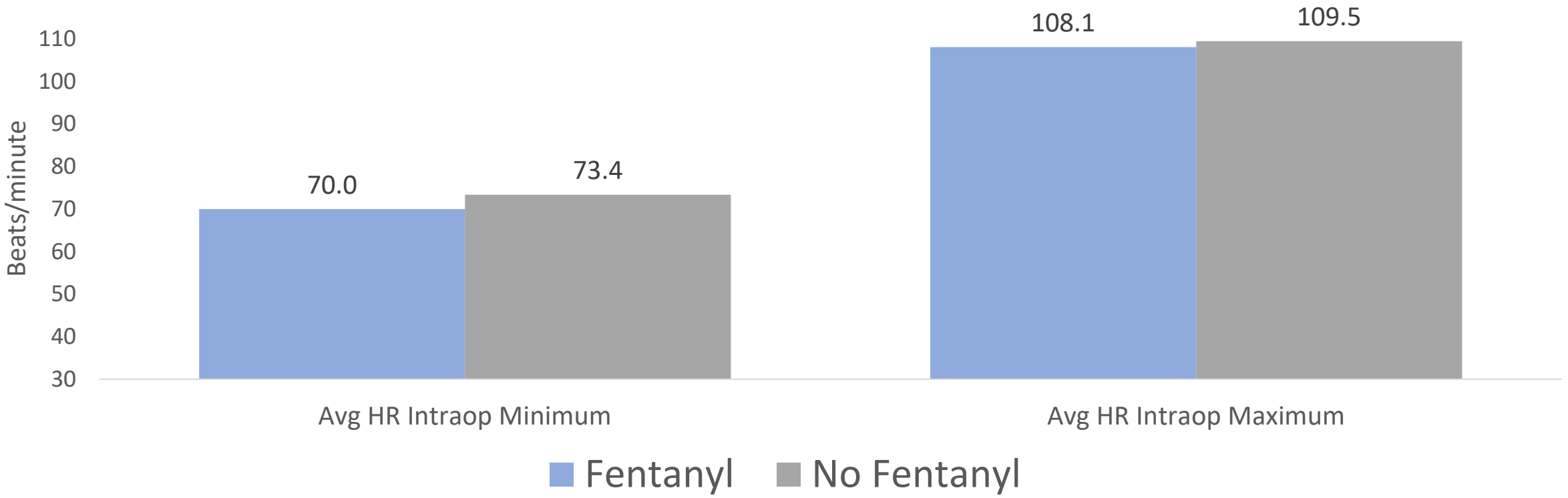
Heart Rate



Avg % Change from Baseline		
	HR Intraop Minimum	HR Intraop Maximum
Fentanyl	-2.4%	51.7%
No Fentanyl	3.2%	54.7%

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Adverse Events

	Fentanyl	No Fentanyl
MAP < 65	1	2
RR < 8	0	0
SpO2 < 92	0	0
Post op Vomiting	0	0

3 Total events

- 1 with fentanyl administration (MAP of 61)
- 2 without fentanyl administration (MAP of 63 and 64)

No statistically significant difference

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Interpretation

In this cohort, fentanyl use was associated with:

- No significant change in intraoperative **physiologic stability**
- No significant difference in **heart rate response** to surgical stimulus
- No significant reduction in **adverse physiologic events**

No measurable physiologic advantage to fentanyl use was observed in this cohort

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Limitations

- Small sample size
- Retrospective study design
- Provider variability in sedation technique
- Use of additional or increased sedative agents when fentanyl was not administered
- Not powered to detect rare adverse events
- Physiologic parameters used as surrogate markers

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Clinical Implications

- Routine fentanyl use may not provide measurable physiologic benefit in outpatient OMFS sedation
- Comparable physiologic stability may be achieved without opioid administration
- Opportunity to reduce opioid exposure in select patients
- Sedation strategies can be tailored based on patient and provider preference

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Future Directions

- Larger, prospective studies to better evaluate differences between groups
- Standardization of sedation protocols to reduce provider variability
- Evaluation of recovery time and postoperative outcomes
- Inclusion of patient-reported outcomes (pain, comfort, satisfaction)

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Summary & Discussion

- Fentanyl use in outpatient OMFS sedation is widespread and experience-driven
- In this cohort, no measurable physiologic benefit was demonstrated
- Comparable stability was achieved without opioid use
- Routine use may warrant reconsideration

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Thank You!