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# Intraoperative Dexmedetomidine Use On Adult Surgical Patients at Providence Sacred Heart Medical Center

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## Background

Opioids are considered the standard of practice for intraoperative and postoperative pain management but yield unfavorable outcomes.<sup>6</sup> The research evidence demonstrates reductions in post-operative opioid use following intraoperative administration of dexmedetomidine.<sup>1,3,4,5,6</sup> Due to the prospective nature of literature surrounding dexmedetomidine, the rate of implementation remains largely unknown.

The aim of this retrospective, observational project was to identify the rate of adoption of intraoperative dexmedetomidine administration among adult surgical patients at Providence Sacred Heart Medical Center (PSHMC) from January 1, 2015 to December 31, 2019. Accordingly, investigation into dexmedetomidine administration at PSHMC may shed light on this strategy aimed to minimize opioid exposure

## Methods

- Retrospective, observational evidence-based practice project.
- Approved by the PSHMC Clinical Innovation and Research Council and deemed exempt from human subject's research by Providence Health Care Institutional Review Board.
- Data extracted, de-identified and stored in HIPPA compliant Redcap project database.
- Included adults over the age of 18 years, undergoing surgical procedure from January 1, 2015 to December 31, 2019.
- Excluded pediatric patients less than 18 years of age, intranasal dexmedetomidine administration, patients undergoing outpatient procedures not admitted to the hospital, hospital length of stay less than 24 hours and greater than 14 days, and morphine equivalent dosing exceeding 200 milligrams.
- Univariate and bivariate analyses examined baseline group comparability, occurrence of intraoperative dexmedetomidine administration.
- Multivariable analysis examined independent risk factors associated with receiving intraoperative dexmedetomidine.

## Findings

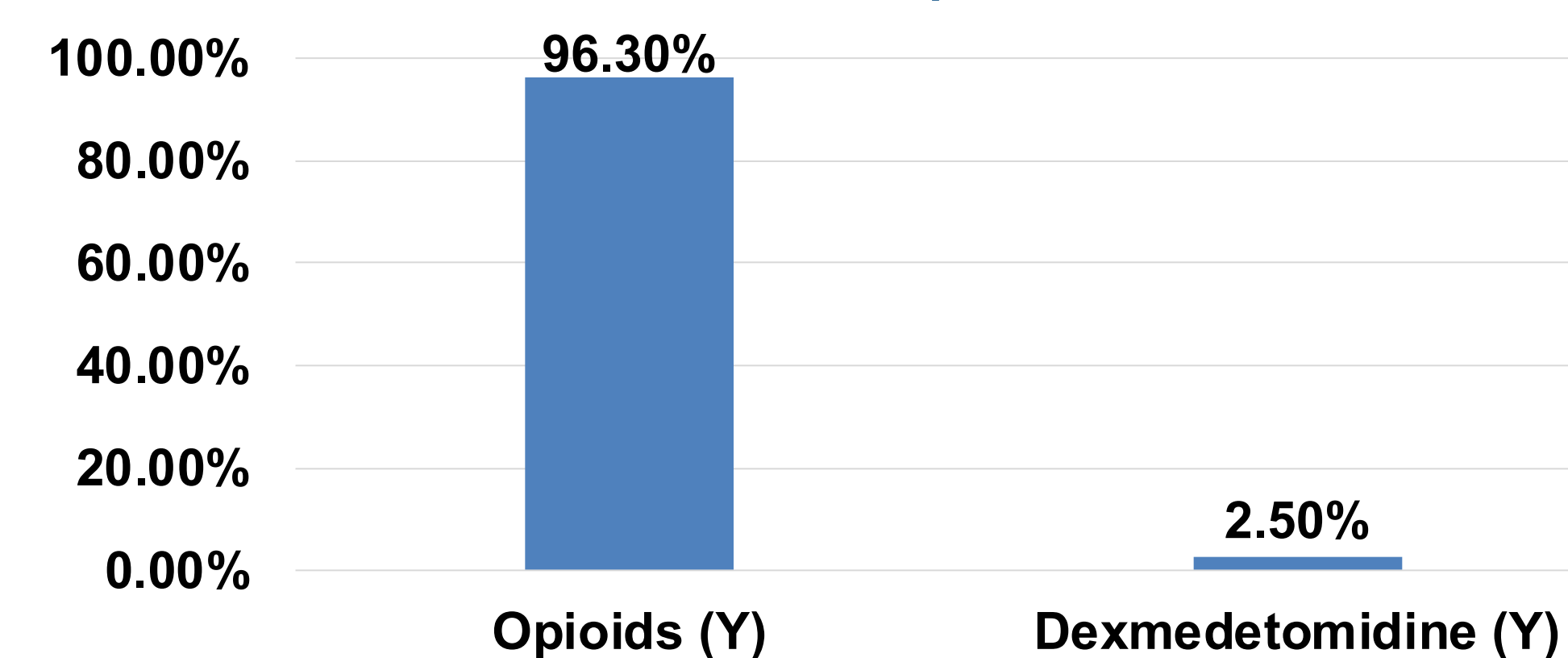
**Table 1. Comparison of Baseline Demographics and Characteristics (N=26,990)**

Characteristics	Values	Count	Percent
<b>Dexmedetomidine</b>		668	2.5%
<b>Gender</b>	Female	13,605	50.4%
	Males	13,385	49.6%
<b>ASA</b>	1	614	2.3%
	2	8,005	29.7%
	3	13,097	48.5%
	4	3,507	13.0%
<b>History</b>	Backpain	5,716	21.2%
	Chronic Pain	1,823	6.8%
	Opioid Treatment	226	0.8%
	Opioid Administration	25,993	96.3%
<b>Service Lines</b>	Neurosurgery	3,040	11.3%
	Cardiothoracic	4,580	17.0%
	ENT	685	2.5%
	Orthopedics	6,554	24.3%
	General	5,121	19.0%
	Vascular	1,737	6.4%
	IR	551	2.0%
	Plastics	906	3.4%
	Gastroenterology	681	2.5%
	Urology	1,296	4.8%
<b>Case Type</b>	Elective	18,331	67.9%
	Emergent	602	2.2%
	Urgent	7,606	28.2%

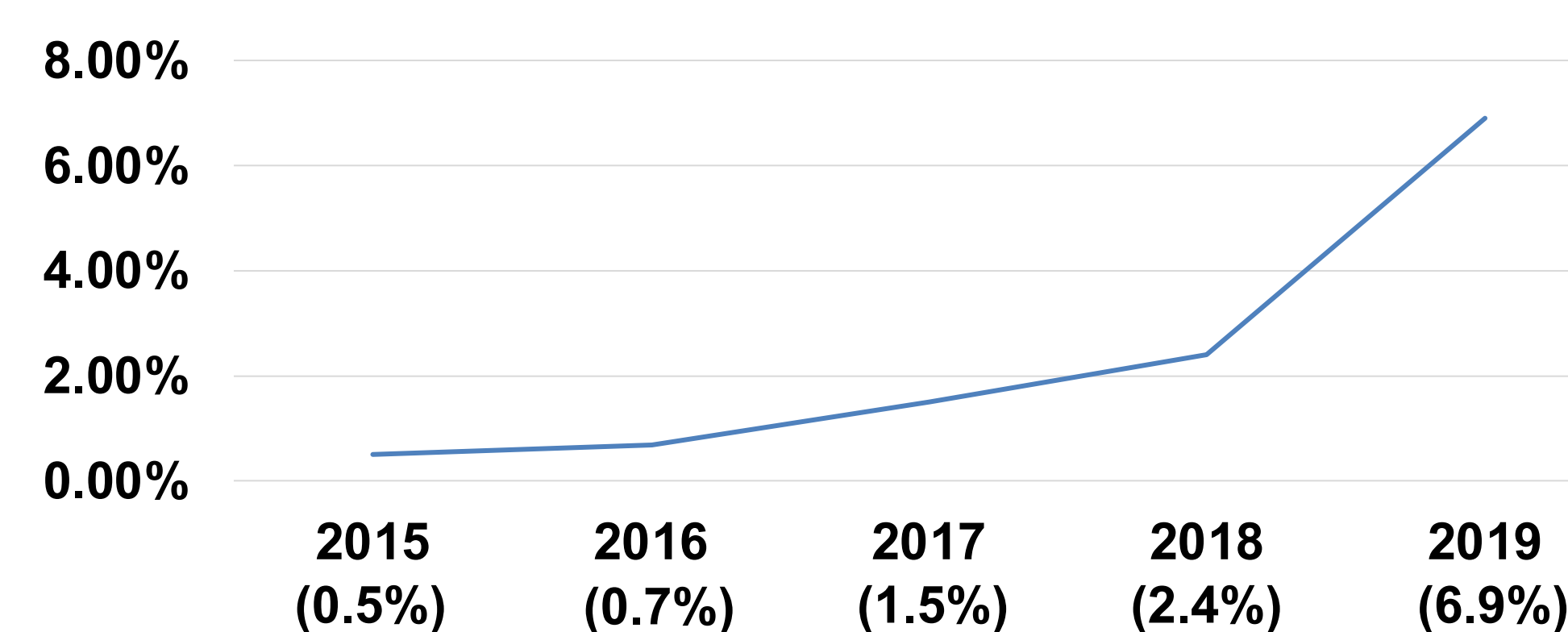
Characteristic	Mean	SD
<b>Age (years)</b>	62	16
<b>BMI (kg/m2)</b>	29.7	40
	Median	IQR
<b>Case Duration (minutes)</b>	166	111-276
<b>Phase 1 Duration (minutes)</b>	69	52-94
<b>Length of Stay (minutes)</b>	6,142	4,166-9,302

ASA: American Society of Anesthesiology Physical Classification; Dex: dexmedetomidine; SD: standard deviation; IQR: interquartile range; LOS: Length of Stay; IR: Interventional Radiology

**Figure 1. Percentage of Cases Receiving Intraoperative Dexmedetomidine and Opioids at PSHMC**



**Figure 2. Intraoperative Dexmedetomidine Administration Annual Trends at PSHMC**



**Table 2. Independent Risk Factors on Intraoperative Dexmedetomidine Administration at PSHMC**

Variable	OR	CI	P-Value
<b>Back Pain</b>	0.92	0.85-1.26	<0.001
<b>ENT, Maxillofacial, or Oral Surgery</b>	6.15	4.60-8.23	<0.001
<b>Cardiothoracic or Cardiovascular</b>	3.64	2.93-4.54	<0.001
<b>Neurosurgery</b>	3.22	2.55-4.07	<0.001
<b>Opioid Treatment</b>	2.80	1.53-5.14	<0.001
<b>Opioid Administration</b>	0.54	0.36-0.81	<0.001
<b>24-Hour Morphine Equivalent Dosing</b>	1.00	1.00-1.00	0.035

## Discussion

Intraoperative dexmedetomidine is an effective evidenced-based strategy to promote opioid sparing effect and reduce 24-hour opioid consumption.<sup>1,4,5,6</sup> Findings identified a 2.5% occurrence of intraoperative dexmedetomidine and 96.3% opioid occurrence in adult surgical patients at (PSHMC) from January 1, 2015 to December 31, 2019. The occurrence of dexmedetomidine administration is not a widespread practice used at PSHMC, but its utilization is increasing. History of backpain and intraoperative opioid administration were independently associated with decreased intraoperative dexmedetomidine use. ENT, maxillofacial and oral surgery were the greatest risk factors for intraoperative dexmedetomidine administration. History of home opioid treatment was also associated with increased intraoperative dexmedetomidine use. The research evidence demonstrates that intraoperative dexmedetomidine is a promising new avenue to reduce postoperative opioid use.<sup>3,4,5,6</sup> The purpose of this retrospective, observational project serves as a foundation for additional examination to identify and report interventions to reduce opioid administration and improve quality initiatives surrounding multimodal analgesia.

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