

# INFOGRAPHICS IN ANESTHESIOLOGY

Complex Information for Anesthesiologists Presented Quickly and Clearly



## Obstructive Sleep Apnea and Opioid-induced Respiratory Depression:

### What do we know?

### Prior Work<sup>1</sup>

**19** asleep OSA patients  
*randomized to*

 remifentanyl  
0.075 mg/kg-IBW per hour

**vs.**  
 saline infusion  
20 ml per hour

*while observing*

Obstructive apnea  
Sleep variables  
 SpO<sub>2</sub>  
Central apnea

Patients receiving remifentanyl were observed to have:

 REM sleep  
Sleep efficiency  
Obstructive apnea  
SpO<sub>2</sub>  
 Central apnea events increased markedly

**Moderate OSA and opioid administration primarily increases risk of central apnea.**

### In this Issue<sup>2</sup>

**30** awake OSA patients  
*vs.*

**20** awake control  
*received*


 **10'** remifentanyl  
0.2 mcg/kg-IBW per min

*while observing*

V<sub>t</sub>  EtCO<sub>2</sub>  
RR MV

Using predicted remifentanyl effect site concentrations to measure OSA impact, none was seen.



 **OSA does not affect the relationship between opioid dose and any ventilation parameters during a brief infusion.**

**More research is needed to understand how we can best care for patients with OSA.**

EtCO<sub>2</sub>, end-tidal carbon dioxide; IBW, ideal body weight; MV, minute ventilation; OSA, obstructive sleep apnea; REM, rapid eye movement; RR, respiratory rate; SpO<sub>2</sub>, oxygen saturation measured by pulse oximetry; V<sub>t</sub>, tidal volume.

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1. Bernards CM, Knowlton SL, Schmidt DF, DePaso WJ, Lee MK, McDonald SB, Bains OS: Respiratory and sleep effects of remifentanyl in volunteers with moderate obstructive sleep apnea. ANESTHESIOLOGY 2009; 110:41–9
2. Doufas AG, Shafer SL, Rashid NHA, Kushida CA, Capasso R: Non–steady state modeling of the ventilatory depressant effect of remifentanyl in awake patients experiencing moderate-to-severe obstructive sleep apnea. ANESTHESIOLOGY 2019; 130:213–26