

What's New in the Patient Safety World

January 2020

Opioids and Apnea: Not Just Surgical Patients

Opioid-induced respiratory depression in patients with obstructive sleep apnea (OSA) has been the topic of many of our columns. But we've most often discussed this in relation to patients undergoing surgery. But medical patients are also at risk. In our May 6, 2014 Patient Safety Tip of the Week "[Monitoring for Opioid-induced Sedation and Respiratory Depression](#)" we noted a study ([Herzig 2014](#)) that showed over half (51%) of non-surgical inpatients receive opioids, often in high doses. And many nonsurgical patients also have a high risk of known or undiagnosed OSA.

Results of the OpiatesHF Study were just published ([Niroula 2019](#)). This study looked at a population known to have a high prevalence of sleep disorder breathing (SDB) – those hospitalized with acute heart failure. Notice we said sleep disordered breathing rather than obstructive sleep apnea. That's because many patients with acute heart failure may have central sleep apnea or Cheyne-Stokes breathing or obstructive sleep apnea. In the OpiatesHF Study, 54% had predominantly central apnea or Cheyne-Stokes breathing and 46% had predominantly obstructive sleep apnea.

The study looked at a sequential group of over 300 patients hospitalized with acute heart failure, who received a portable sleep study (PSS) after screening for SDB using the STOP-BANG questionnaire. The researchers then did a retrospective review of charts to assess use of opiates, need for escalation of care (defined as transfer to the intensive care unit), 30-day readmission, and length of stay.

Overall, 41.5% received opiates in the hospital, and 49.5% patients had an AHI (apnea/hypopnea index) greater than or equal to 10/h by PSS (high risk of SDB). In this high-risk group, 32% received opiates. Among those with an AHI greater than or equal to 10/h, escalation of care occurred in 26% of those who received opiates versus 4% of those who did not. Readmission within 30 days occurred in 15% of those who received opiates versus 9% of those who did not, though that difference did not meet statistical significance. Mean LOS did not differ significantly between groups.

The key finding of this study is that use of opioids in this patient population can be dangerous and should be avoided but also that careful monitoring is needed when opioids

are necessary. As per our usual recommendations, that should include not just pulse oximetry but also apnea monitoring and capnography. The study also notes the utility of screening patients with the STOP-BANG questionnaire and perhaps doing a portable sleep study to further risk-stratify patients.

Apparently, opioids were most often used in these patients for comorbid conditions, like arthritis or back pain, and had often been used prior to admission. Some who were recognized to be at high risk might be considered for discontinuation of outpatient opioids and/or considered for CPAP, where appropriate based on results of a sleep study.

But the study also raises one other important issue. Low-dose opioids are often used in palliative care to reduce the sensation of dyspnea or breathlessness, and more and more patients with heart failure are in palliative care programs. The OpiatesHF Study did not specifically look at the correlation between opioid dose and outcomes, but it is known that the impact of opioids on SDB is dose-dependent. It would be of interest to see whether risk stratification (by presence or absence of SDB) is of benefit in heart failure patients receiving palliative care.

The OpiatesHF Study serves as a reminder that opioid use is common in nonsurgical patients admitted to the hospital and that many, particularly those with acute heart failure, also have sleep disordered breathing that may put them at risk if opioids are given.

Other Patient Safety Tips of the Week pertaining to opioid-induced respiratory depression and PCA safety:

- January 4, 2011 [“Safer Use of PCA”](#)
- July 13, 2010 [“Postoperative Opioid-Induced Respiratory Depression”](#)
- May 12, 2009 [“Errors With PCA Pumps”](#)
- September 21, 2010 [“Dilaudid Dangers”](#)
- November 2010 [“More on Preoperative Screening for Obstructive Sleep Apnea”](#)
- February 22, 2011 [“Rethinking Alarms”](#)
- May 17, 2011 [“Opioid-Induced Respiratory Depression – Again!”](#)
- September 6, 2011 [“More Tips on PCA Safety”](#)
- December 6, 2011 [“Why You Need to Beware of Oxygen Therapy”](#)
- February 21, 2012 [“Improving PCA Safety with Capnography”](#)
- September 2012 [“Joint Commission Sentinel Event Alert on Opioids”](#)
- September 2012 [“FDA Warning on Codeine Use in Children Following Tonsillectomy”](#)
- July 3, 2012 [“Recycling an Old Column: Dilaudid Dangers”](#)
- February 12, 2013 [“CDPH: Lessons Learned from PCA Incident”](#)
- February 19, 2013 [“Practical Postoperative Pain Management”](#)
- May 6, 2014 [“Monitoring for Opioid-induced Sedation and Respiratory Depression”](#)

- March 3, 2015 “[Factors Related to Postoperative Respiratory Depression](#)”
- June 2, 2015 “[Reminders of Dilaudid Dangers](#)”
- August 11, 2015 “[New Oxygen Guidelines: Thoracic Society of Australia and NZ](#)”
- August 18, 2015 “[Missing Obstructive Sleep Apnea](#)”
- December 2015 “[Opioid Alert Fatigue](#)”
- March 2016 “[Guideline for Management of Postoperative Pain](#)”
- June 14, 2016 “[Nursing Monitoring of Patients on Opioids](#)”
- October 11, 2016 “[New Guideline on Preop Screening and Assessment for OSA](#)”
- December 6, 2016 “[Postoperative Pulmonary Complications](#)”
- May 2017 “[Another Twist in Opioid-Induced Respiratory Depression](#)”
- June 2017 “[Masterpiece: Monitoring for Opioid-Induced Respiratory Depression](#)”
- June 20, 2017 “[Dilaudid Dangers #4](#)”
- October 3, 2017 “[Respiratory Compromise: One Size Does Not Fit All](#)”
- November 2017 “[Bad Combination: Gabapentin and Opioids](#)”
- November 21, 2017 “[OSA, Oxygen, and Alarm Fatigue](#)”
- July 31, 2018 “[Surgery and the Opioid-Tolerant Patient](#)”
- February 12, 2019 “[2 ER Drug Studies: Reassurances and Reservations](#)”
- March 2019 “[Gabapentin and Pregabalin on the Radar Screen](#)”
- June 18, 2019 “[Found Dead in a Bed](#)”
- Tools: [PCA Pump Audit Tool](#) and the [PCA Pump Criteria](#)

References:

Herzig SJ, Rothberg MB, Chekung M, et al. Opioid utilization and opioid-related adverse events in nonsurgical patients in US hospitals. *Journal of Hospital Medicine* 2014; 9(2): 73-81

<http://onlinelibrary.wiley.com/doi/10.1002/jhm.2102/abstract>

Niroula A, Garvia V, Rives-Sanchez M, et al. Opiate Use and Escalation of Care in Hospitalized Adults with Acute Heart Failure and Sleep-disordered Breathing (OpiatesHF Study). *Ann Am Thorac Soc* 2019; 16(9): 1165-1170

<https://www.atsjournals.org/doi/abs/10.1513/AnnalsATS.201902-100OC>



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