

UCLA

UCLA Previously Published Works

Title

Chronic Opioid Therapy and Sleep: An American Academy of Sleep Medicine Position Statement.

Permalink

<https://escholarship.org/uc/item/1kg3b79f>

Journal

Journal of Clinical Sleep Medicine, 15(11)

Authors

Rosen, Ilene

Aurora, R

Kirsch, Douglas

et al.

Publication Date

2019-11-15

DOI

10.5664/jcsm.8062

Peer reviewed

SPECIAL ARTICLES

Chronic Opioid Therapy and Sleep: An American Academy of Sleep Medicine Position Statement

Ilene M. Rosen, MD, MS¹; R. Nisha Aurora, MD, MHS²; Douglas B. Kirsch, MD³; Kelly A. Carden, MD⁴; Raman K. Malhotra, MD⁵; Kannan Ramar, MD⁶; Fariha Abbasi-Feinberg, MD⁷; David A. Kristo, MD⁸; Jennifer L. Martin, PhD^{9,10}; Eric J. Olson, MD⁶; Carol L. Rosen, MD¹¹; James A. Rowley, MD¹²; Anita V. Shelgikar, MD, MHPE¹³; American Academy of Sleep Medicine Board of Directors

¹Division of Sleep Medicine, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania; ²Department of Medicine, Rutgers Robert Wood Johnson Medical School, New Brunswick, New Jersey; ³Sleep Medicine, Atrium Health, Charlotte, North Carolina; ⁴Saint Thomas Medical Partners - Sleep Specialists, Nashville, Tennessee; ⁵Sleep Medicine Center, Washington University School of Medicine, St. Louis, Missouri; ⁶Division of Pulmonary and Critical Care Medicine, Center for Sleep Medicine, Mayo Clinic, Rochester, Minnesota; ⁷Millennium Physician Group, Fort Myers, Florida; ⁸University of Pittsburgh, Pittsburgh, Pennsylvania; ⁹Veteran Affairs Greater Los Angeles Healthcare System, North Hills, California; ¹⁰David Geffen School of Medicine at the University of California, Los Angeles, California; ¹¹Department of Pediatrics, Case Western Reserve University, University Hospitals - Cleveland Medical Center, Cleveland, Ohio; ¹²Wayne State University, Detroit, Michigan; ¹³University of Michigan Sleep Disorders Center, University of Michigan, Ann Arbor, Michigan

There is a complex relationship among opioids, sleep and daytime function. Patients and medical providers should be aware that chronic opioid therapy can alter sleep architecture and sleep quality as well as contribute to daytime sleepiness. It is also important for medical providers to be cognizant of other adverse effects of chronic opioid use including the impact on respiratory function during sleep. Opioids are associated with several types of sleep-disordered breathing, including sleep-related hypoventilation, central sleep apnea (CSA), and obstructive sleep apnea (OSA). Appropriate screening, diagnostic testing, and treatment of opioid-associated sleep-disordered breathing can improve patients' health and quality of life. Collaboration among medical providers is encouraged to provide high quality, patient-centered care for people who are treated with chronic opioid therapy.

Citation: Rosen IM, Aurora RN, Kirsch DB, Carden KA, Malhotra RK, Ramar K, Abbasi-Feinberg F, Kristo DA, Martin JL, Olson EJ, Rosen CL, Rowley JA, Shelgikar AV; American Academy of Sleep Medicine Board of Directors. Chronic opioid therapy and sleep: an American Academy of Sleep Medicine position statement. *J Clin Sleep Med.* 2019;15(11):1671–1673.

INTRODUCTION

The American Academy of Sleep Medicine (AASM) is the leading professional society dedicated to the promotion of sleep health. The AASM improves sleep health and fosters high-quality, patient-centered care through advocacy, education, strategic research, and practice standards. The AASM endeavors to advance sleep health policy that improves the health and well-being of the general public.

While fatigue and disturbed sleep are common symptoms of chronic pain, there is also a complex relationship among opioids, sleep and daytime function.¹ Chronic use of opioid therapy is known to disrupt sleep architecture and sleep stage distribution. These opioid-related sleep disturbances in turn can cause or contribute to disturbed sleep, fatigue and daytime sleepiness.

Another adverse effect of opioid use is respiratory depression.² It is important for medical providers to be aware of the risk of sleep-disordered breathing in chronic opioid therapy patients.^{3–6} Types of sleep-disordered breathing that can be associated with chronic opioid use include both isolated symptoms (eg, snoring), as well as sleep-related breathing disorders characterized by abnormalities of respiration during sleep, including sleep-related hypoventilation, central sleep apnea (CSA), and obstructive sleep apnea (OSA).^{7,8} Effective testing is available for sleep-disordered breathing associated with opioid therapy, and treatment can improve patients' health and well-being.

While opioid therapy can contribute to sleep disruption and sleep-disordered breathing, there is one sleep disorder for which narcotics may be prescribed as a therapy. Current guidelines state that opioid therapy can be an effective treatment option for patients with severe, refractory restless legs syndrome (RLS) in whom other therapies have failed to control symptoms.⁹

POSITION

It is the position of the AASM that:

- Medical providers need to be aware that chronic opioid therapy can alter sleep architecture and cause respiratory depression, increasing the risk for sleep-disordered breathing.
- Appropriate screening and diagnostic testing can identify sleep-related hypoventilation, CSA, and OSA in people treated with chronic opioid therapy.
- The treatment of opioid-associated sleep-disordered breathing can improve patients' health and well-being.
- In patients with chronic pain, collaboration among primary care providers, pain medicine specialists, and sleep specialists is encouraged to provide high quality, patient-centered care for people who are treated with chronic opioid therapy.

- Medical providers need to be aware that the cautious and judicious use of low-dose opioid therapy is a treatment option for severe, refractory RLS.

DISCUSSION

The use of opioid medications has soared since 1990 and has received increasing attention given its overall impact on our nation's social welfare and public health.^{10,11} Nearly 92 million Americans use prescription opioids, 11.5 million misuse them, and 1.9 million have opioid use disorder.¹² Since the late 1990s an epidemic of drug overdose deaths has developed in the U.S. In 2017 alone, approximately 68% of the more than 70,200 overdose deaths involved either a prescription opioid, an illegal opioid such as heroin, or illicitly manufactured fentanyl.¹³

Although nonpharmacologic therapy and nonopioid pharmacologic therapy are preferred treatment options for chronic pain, current clinical guidelines from the American Academy of Pain Medicine, American Pain Society, and the Centers for Disease Control and Prevention acknowledge that long-term prescription opioids remain a viable treatment option for some patients with chronic, noncancer pain when the expected benefits are anticipated to outweigh the potential harms.^{14,15} These clinical guidelines define chronic opioid therapy as the use of opioids on most days for at least three months.

Regular, chronic use of opioids is known to interfere with sleep via several mechanisms. It can lead to changes in sleep architecture including a reduction in sleep efficiency as well as slow wave sleep.¹⁶ There also may be a reduction in rapid eye movement (REM) sleep.¹⁷ These effects of chronic opioid ingestion on sleep architecture appear to be dose dependent and lead to poor sleep quality, resulting in daytime sleepiness.^{1,16-19}

In addition to causing changes in sleep architecture, multiple studies have demonstrated that chronic use of opioids is associated with an increase in sleep-disordered breathing.^{20,21} The use of chronic opioids can result in isolated symptoms (eg, snoring) and/or more severe abnormalities of respiration during sleep, including sleep-related hypoventilation, CSA and OSA.^{7,8} Sleep-related hypoventilation involves chronic hypoventilation and hypercapnia due to impaired respiratory drive and alterations in carbon dioxide (CO₂) and oxygen (O₂) chemosensitivity. While both OSA and CSA have been noted, studies have generally demonstrated a higher prevalence of CSA with chronic opioid use.²⁰⁻²² In CSA, the repetitive cessation of breathing is associated with absent or reduced respiratory effort due to diminished central respiratory drive, which may be further impaired in the setting of chronic opioid use.²³ When CSA is caused by an opioid or other respiratory depressant, ataxic breathing can occur.²⁴ OSA is characterized by repetitive episodes of complete or partial upper airway obstruction, with subsequent reductions in blood oxygen saturation, and may be terminated by brief arousals from sleep.²³ While untreated CSA and OSA can be detrimental to a patient's health and well-being, effective treatments are available, including different modalities of positive airway pressure (PAP) therapy, such as continuous PAP (CPAP), bilevel PAP (BPAP), and adaptive servo-ventilation (ASV).

Polysomnography (PSG) is one type of sleep test that is indicated for the diagnosis of sleep-related breathing disorders.²⁵ Although a home sleep apnea test (HSAT) may be used for the diagnosis of OSA in uncomplicated adult patients presenting with signs and symptoms that indicate an increased risk of moderate-to-severe OSA, diagnosis by HSAT has not been substantiated for the evaluation of sleep-disordered breathing in patients taking opioid medications and those who are at increased risk for nonobstructive sleep-disordered breathing.²⁶ Also, the use of arterial PCO₂ or surrogate (ie, end-tidal PCO₂ or transcutaneous PCO₂) during polysomnography is required for the diagnosis of sleep-related hypoventilation.^{23,27}

Although opioid therapy can contribute to sleep disruption, daytime symptoms and sleep-disordered breathing, narcotics are also prescribed in rare cases of RLS, a sleep-related movement disorder that is associated with disturbed sleep.²³ Opioids can be especially useful in patients with severe, refractory RLS, who are unresponsive or intolerant to other recommended therapies such as iron, dopamine agonists, antiepileptic medications, or benzodiazepenes.^{9,28-30} The effective opioid doses for RLS are significantly lower than those used for chronic pain; therefore, treatment tends to be well-tolerated and less likely to produce dependence in people with RLS.²⁹⁻³¹ To promote the assessment of the long-term safety and effectiveness of opioid medications for RLS, a national RLS Opioid Registry has been created.³²

CONCLUSIONS

Chronic opioid therapy requires careful clinical attention because of the serious risks of addiction, abuse, and overdose. While fatigue and disturbed sleep are common symptoms of chronic pain, there is a complex relationship among opioids, sleep and daytime function that can also contribute to fatigue and disturbed sleep. Therefore, it is important for medical providers to be aware that chronic opioid use is associated with changes in sleep architecture and an increased risk of respiratory depression during sleep. Appropriate screening and diagnostic testing with in-laboratory PSG can identify sleep-related hypoventilation, CSA and OSA in people treated with chronic opioid therapy. Although the best therapeutic option for opioid-associated sleep-disordered breathing may be withdrawal of opioids, providers are often faced with the challenge of effectively managing the underlying disorder while also ensuring patient safety, which requires collaborative care. The treatment of sleep-disordered breathing with an effective PAP modality in these patients can improve their health and well-being.

REFERENCES

1. Cao M, Javaheri S. Effects of chronic opioid use on sleep and wake. *Sleep Med Clin.* 2018;13(2):271-281.
2. American Academy of Pain Medicine. Use of opioids for the treatment of chronic pain. <https://painmed.org/uploads/about/position-statements/use-of-opioids-for-the-treatment-of-chronic-pain.pdf>. Approved February 2013. Accessed Aug. 29, 2019.
3. Mogri M, Khan MIA, Grant BJB, et al. Central sleep apnea induced by acute ingestion of opioids. *Chest.* 2008;133(6):1484-1488.

4. Webster LR, Choi Y, Desai H, et al. Sleep-disordered breathing and chronic opioid therapy. *Pain Med*. 2008;9(4):425–432.
5. Sharkey KM, Kurth ME, Anderson BJ, et al. Obstructive sleep apnea is more common than central sleep apnea in methadone maintenance patients with subjective sleep complaints. *Drug Alcohol Depend*. 2010;108(1-2):77–83.
6. Sun EC, Darnall BD, Baker LC, et al. Incidence of and risk factors for chronic opioid use among opioid-naïve patients in the postoperative period. *JAMA Intern Med*. 2016;176(9):1286–1293.
7. Chowdhuri S, Javaheri S. Sleep disordered breathing caused by chronic opioid use: diverse manifestations and their management. *Sleep Med Clin*. 2017;12(4):573–586.
8. Farney RJ, McDonald AM, Boyle KM, et al. Sleep disordered breathing in patients receiving therapy with buprenorphine/naloxone. *Eur Respir J*. 2013;42(2):394–403.
9. Aurora RN, Kristo DA, Bista SR, et al. The treatment of restless legs syndrome and periodic limb movement disorder in adults—an update for 2012: practice parameters with an evidence-based systematic review and meta-analyses. *Sleep*. 2012;35(8):1039–1062.
10. Berterame S, Erthal J, Thomas J, et al. Use of and barriers to access to opioid analgesics: a worldwide, regional, and national study. *Lancet*. 2016;387(10028):1644–1656.
11. Rutkow J, Vernick JS. Emergency legal authority and the opioid crisis. *N Engl J Med*. 2017;377(26):2512–2514.
12. Han B, Compton WM, Blanco C, et al. Prescription opioid use, misuse and use disorders in U.S. Adults: 2015 national survey on drug use and health. *Ann Intern Med*. 2017;167(5):293–301.
13. Centers for Disease Control and Prevention. Opioid overdose. Opioid basics. Understanding the epidemic. <https://www.cdc.gov/drugoverdose/epidemic/index.html>. Updated Dec. 19, 2018. Accessed Aug. 29, 2019.
14. Chou R, Fanciullo GJ, Fine PG, et al.; and the American Pain Society-American Academy of Pain Medicine Opioids Guidelines Panel. Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain. *J Pain*. 2009;10(2):113–130.
15. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain - United States, 2016. *MMWR Recomm Rep*. 2016;65(1):1–49.
16. Xiao L, Tang Y, Smith AK, et al. Nocturnal sleep architecture disturbances in early methadone treatment patients. *Psychiatry Res*. 2010;179(1):91–95.
17. Teichtahl H, Prodromidis A, Miller B, et al. Sleep disordered breathing in stable methadone programme patients: a pilot study. *Addiction*. 2001;96(3):395–403.
18. Wang D, Teichtahl H, Drummer O, et al. Central sleep apnea in stable methadone maintenance treatment patients. *Chest*. 2005;128(3):1348–1356.
19. Dunn KE, Finan PH, Andrew Tompkins D, Strain EC. Frequency and correlates of sleep disturbance in methadone and buprenorphine-maintained patients. *Addict Behav*. 2018;76:8–14.
20. Rose AR, Catcheside PG, McEvoy RD, et al. Sleep disordered breathing and chronic respiratory failure in patients with chronic pain on long term opioid therapy. *J Clin Sleep Med*. 2014;10(8):847–852.
21. Van Ryswyk E, Antic NA. Opioids and sleep-disordered breathing. *Chest*. 2016;150(4):934–944.
22. Correa D, Farney RJ, Chung F, et al. Chronic opioid use and central sleep apnea: a review of the prevalence, mechanisms, and perioperative considerations. *Anesth Analg*. 2015;120(6):1273–1285.
23. American Academy of Sleep Medicine. *International Classification of Sleep Disorders*. 3rd ed. Darien, IL: American Academy of Sleep Medicine; 2014.
24. Walker JM, Farney RJ, Rhondeau SM, Boyle KM, Cloward TV, Shilling KC. Chronic opioid use is a risk factor for the development of central sleep apnea and ataxic breathing. *J Clin Sleep Med*. 2007;3(5):455–461.
25. Kushida CA, Littner MR, Morgenthaler T, et al. Practice parameters for the indications for polysomnography and related procedures: an update for 2005. *Sleep*. 2005;28(4):499–523.
26. Kapur VK, Auckley DH, Chowdhuri S, Kuhlmann DC, Mehra R, Ramar K, Harrod CG. Clinical practice guideline for diagnostic testing for adult obstructive sleep apnea: an American Academy of Sleep Medicine clinical practice guideline. *J Clin Sleep Med*. 2017;13(3):479–504.
27. Berry RB, Albertario CL, Harding SM, et al; for the American Academy of Sleep Medicine. *The AASM Manual for the Scoring of Sleep and Associated Events: Rules, Terminology and Technical Specifications*. Version 2.5. Darien, IL: American Academy of Sleep Medicine; 2018.
28. Garcia-Borreguero D, Silber MH, Winkelmann JW, et al. Guidelines for the first-line treatment of restless legs syndrome/Willis-Ekbom disease, prevention and treatment of dopaminergic augmentation: a combined task force of the IRLSSG, EURLSSG, and the RLS-foundation. *Sleep Med*. 2016;21:1–11.
29. Silver N, Allen RP, Senerth J, Earley CJ. A 10-year, longitudinal assessment of dopamine agonists and methadone in the treatment of restless legs syndrome. *Sleep Med*. 2011;12(5):440–444.
30. Trenkwalder C, Winkelmann J, Inoue Y, Paulus W. Restless legs syndrome-current therapies and management of augmentation. *Nat Rev Neurol*. 2015;11(8):434–445.
31. Silber MH, Becker PM, Buchfuhrer MJ, et al. The appropriate use of opioids in the treatment of refractory restless legs syndrome. *Mayo Clin Proc*. 2018;93(1):59–67.
32. Massachusetts General Hospital. National RLS opioid registry. <https://www.massgeneral.org/rls-registry/>. Accessed Aug. 29, 2019.

ACKNOWLEDGMENTS

The board of directors thanks AASM staff members who assisted with the development of this position statement.

SUBMISSION & CORRESPONDENCE INFORMATION

Submitted for publication August 30, 2019

Submitted in final revised form September 5, 2019

Accepted for publication September 5, 2019

Address correspondence to: Ilene M. Rosen, MD, MS, Penn Sleep Center, 3624 Market Street, Suite 205, Philadelphia, PA 19104; Tel: (215) 662-7772; Fax (215) 615-4874; Email: ilene.rosen@uphs.upenn.edu

DISCLOSURE STATEMENT

The authors are the 2018–2020 board of directors of the AASM. This position statement is intended by the AASM to help physicians and other medical providers make decisions about the appropriate care of patients treated with chronic opioid therapy. It is to be used for educational and informational purposes only.