2022 Strategic Research Grant: AASM Strategic Plan Goals

High-Impact Sleep Research Topics

1. Advocacy to Improve Patient Care

Central Sleep Apnea

- Study medical therapies for central sleep apnea.
- Understand what symptoms are associated with central sleep apnea against controls (e.g., is fatigue more common in opiate-related central sleep apnea than in opiate users without central sleep apnea – or are there more awakenings in obstructive sleep apnea + treatment-emergent central sleep apnea vs. obstructive sleep apnea - treatment-emergent central sleep apnea?).
- Understand when central sleep apnea patients benefit from treatment and determine if there are any symptoms that improve with reducing the central apnea-hypopnea index.

Circadian Rhythm Sleep-Wake Disorders

- Understand the role of sleep and circadian rhythms in the effects of working time arrangements on health, and what can be done clinically for mitigation and prevention.
- Understand the relationship between sleep and circadian rhythm disorders and the development/outcomes of clinical dementias such as Alzheimer's disease.
- Identify the role of exogenous and endogenous risk factors for the development of circadian rhythm sleep-wake disorders (e.g., delayed sleep-wake phase disorder /shift work disorder).
- Study treatment and management of shift work disorder, especially rotating shift work.
- Advance understanding of sleep and circadian rhythm disorders in disadvantaged populations such as urban poor and rural dwelling populations. Accelerate programs to implement best practices for gaps identified in the management of sleep disorders in these populations.

COVID-19

- Study long COVID and its potential overlap with sleep disorders - given that fatigue and "brain fog," sleep disorders, and use of long-term benzodiazepines/sedative-hypnotics are more prevalent after hospital discharge among patients with COVID-19.
- Study screening, diagnosis and treatment of sleep disorders among patients with long COVID, including sleep apnea (obstructive, central), disorders of central hypersomnolence (narcolepsy, idiopathic hypersomnia), circadian rhythm disorders, and use of medications that impact sleep.
- Assess the association between outcomes of COVID-19 and OSA/adherence to PAP therapy.
- Evaluate disparities in the access to care, management, and outcomes of sleep disorders during the pandemic: characteristics, causes, and potential solutions.
- Study healthcare worker burnout during the pandemic: role of sleep and sleep disorders.
- Study pediatric sleep practices during COVID-19: feasibility and accuracy of out-of-center diagnostic testing and management pathways.
- Evaluate the role of sleep in immune response to COVID-19 vaccination.
- Evaluate the role of sleep in immune response to SARS-CoV-2 infection.

Diagnosis of Central Disorders of Hypersomnolence

- Study the diagnostic process for central disorders of hypersomnolence, particularly narcolepsy type 2 and idiopathic hypersomnia.
- Validate the use of wearables/remote assessment in the diagnosis of narcolepsy and idiopathic hypersomnia.
- Studies focused on better understanding the pathophysiology of narcolepsy type 2 and idiopathic hypersomnia.
- Identify diagnostic and prognostic biomarkers of hypersomnia disorders.
- Studies that improve the validity/reliability of diagnostic testing for narcolepsy type 2 and idiopathic hypersomnia diagnoses. This may include novel diagnostic testing or refinements to the existing PSG-MSLT protocols.
- Studies that differentiate narcolepsy type 2 and idiopathic hypersomnia.
- Studies to identify phenotypes within the narcolepsy type 2 and idiopathic hypersomnia group/spectrum.
- Determine what defines disturbed nocturnal sleep (e.g., how clinicians are assessing nocturnal sleep quality, if lack of slow-wave/REM, a high arousal index or other PSG features correlate to excessive daytime sleepiness, cataplexy, and/or other adverse health outcomes).

Insomnia

- Develop model interventional programs to enhance awareness and treatment of chronic insomnia among primary care providers.
- Identify subtypes/characteristics of chronic insomnia and their associated health risks (cardiovascular/metabolic/neurologic/psychiatric, etc.).
- Define the role of advanced sleep-wake phase in the development of sleep maintenance insomnia among the elderly.

Management of Obstructive Sleep Apnea in Primary Care

- Elucidate and refine OSA phenotyping in real world health setting to facilitate personalized treatments for sleep-disordered breathing.

Population Sleep Health

- Develop people-driven approaches to improve awareness of sleep and circadian disorders.
- Evaluate ways to promote healthy sleep behaviors for the benefit of public health and safety.
- Improve the understanding of the prevalence and impact of sleepiness in the primary care setting.
- Further elucidate the relationship between sleep and cardiovascular health.
- Assess shared decision-making and how it can best be done, how it impacts patients, if it is related to better outcomes or quality of life of treatment adherence and persistency.
- Evaluate health economics and outcome data for sleep disorders.

REM Sleep Behavior Disorder

- Develop multicenter clinical trial infrastructure and key measures for symptomatic therapy of RBD.
- Develop novel at-home bio-physiological measures of REM motor atonia and dream enactment.
- Conduct prospective multicenter clinical trial of RBD symptomatic therapies.
- Develop novel at-home bio-physiological measures of REM motor atonia and dream enactment.
- Develop multicenter clinical trial infrastructure for disease modifying therapy for RBD.
- Develop biophysiological measures of alpha-synuclein pathology in subjects with RBD to measure disease modifying therapy treatment response.
- Understand what features of periodic leg movements during sleep indicate clinical or health impact, warrant a diagnosis of Periodic Limb Movement Disorder, or suggest that treatment would be worthwhile.

- Better define circumstances, findings, or biomarkers that predict evolution of idiopathic REM sleep behavior disorder to a neurodegenerative disease, or evolution of REM sleep without atonia to frank REM sleep behavior disorder.
- Study the evaluation, treatment, and follow-up of patients with REM sleep without atonia.

Sleep Related Movement Disorders

- Assess treatment options for sleep-related leg cramps.

Special Populations

- Study racial health disparities in treatment of insomnia.
- Evaluate sleep apnea in transgender patients on hormonal therapies.
- Research the prevalence, causes, and impact of sleepiness in patients with psychiatric disorders.
- Study treatment options for sleep disorders in underserved populations.
- Study treatment options for obesity hypoventilation syndrome.

Translational Science

- Study how genetic information translates into differing clinical responses and outcomes (e.g., using what loci correspond to short/long sleepers).

2. Technology Innovation

Follow-Up Polysomnography and Home Sleep Apnea Tests

- Enhance HSAT specificity to reliably rule out OSA among patients receiving treatment.
- Compare clinician global assessment, HSAT and PSG as reliable tools to evaluate changes in symptoms and/or outcomes in patients receiving therapy.
- Establish reliability and utility of HSAT in patients with cardiopulmonary or neuromuscular disease.
- Determine the optimal timing of follow-up sleep apnea testing after surgical modifications of the upper airway for OSA.
- Identify the ideal timing for follow-up testing in patients with OSA who have experienced a change in weight, both by medical/dietary means, and following bariatric surgery.
- Explore the utility of pulse oximetry as a tool for follow-up of patients with OSA, including those with cardiopulmonary disease.
- Perform comparative studies of outcomes between empiric adjustments of OSA therapy based upon clinical assessment or PAP machine AED with interventions based upon follow-up testing.

- Increase understanding of whether TECSA encountered on machine AED or on follow-up testing is significant and warrants intervention.

Obstructive Sleep Apnea

- Assess measurements of sleep apnea severity beyond AHI.
- Use machine learning to identify novel polysomnogram measures beyond the AHI for the prediction of obstructive sleep apnea outcomes and treatment response.
- Develop machine learning algorithms to predict obstructive sleep apnea and other sleep disorders from sensors used in the home.

Special Populations

- Study disparities in access to telehealth services.
- Use machine learning to identify novel polysomnogram measures predictive of neurodegenerative disease.