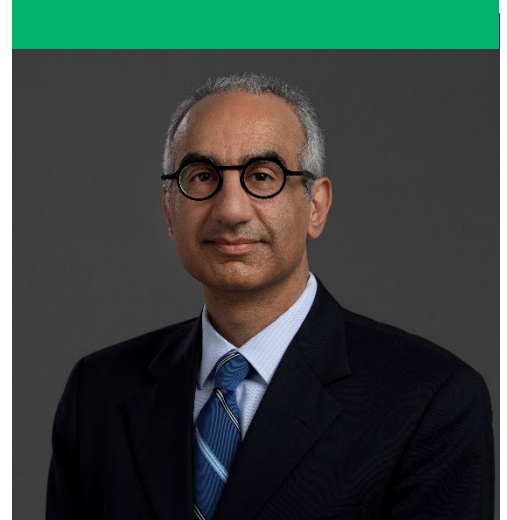


# Babak Mokhlesi, MD, MSc

The J. Bailey Carter, MD, Professor of Cardiology



## Advancement of Medicine

In 2023, I continued investigations relating to my area of expertise in the field of sleep-disordered breathing and hypoventilation syndromes. My clinical research explores the impact of sleep and obstructive sleep apnea (OSA) on type 2 diabetes and prediabetes as well as the intersection of sleep-disordered breathing and various pulmonary/critical care disorders such as acute-on-chronic hypercapnic respiratory failure in the ICU (i.e., obesity hypoventilation syndrome). Since my arrival at Rush in late 2021, I have been collaborating with Rush scientist Sanda Predescu, PhD, to better elucidate whether obesity and sleep apnea are risk factors in pulmonary hypertension. Pulmonary arterial hypertension (PAH) is a life-threatening progressive disorder, associated with abnormally elevated pulmonary pressure, pulmonary artery remodeling and occlusion of small pulmonary arteries. There is currently no cure and even with treatment, the prognosis of PAH is poor with a one-year mortality of 15%. Common comorbidities in patients with PAH include obstructive sleep apnea (OSA) and obesity.

## Research

Funds from the J. Bailey Carter Endowment support key laboratory personnel, purchasing equipment and maintaining equipment. This enables us to carry out translational research using murine models to explore the role of obesity and exposure to low levels of oxygen on progression of pulmonary arterial hypertension. We have developed and perfected the animal model to understand a deeper understanding of disease mechanisms.

## Grants

We plan to submit a multi-PI NIH R01 application based on the preliminary data we have accumulated.

## Presentation and Speaking Engagements

“Obesity hypoventilation syndrome: Lessons learned from the Pickwick Papers,” Rutgers University Department of Medicine Grand Rounds. (2023)

American Thoracic Society (ATS) Fellow Track Symposium, ATS International Meeting. “Obesity hypoventilation syndrome: shallow breathing into the night.” Washington, D.C. (2023)

Postgraduate course at ATS: State of the art management of non-invasive ventilation from hospital to ambulatory care. “Noninvasive ventilation in obesity hypoventilation syndrome.” Washington, D.C. (2023)

Postgraduate course SLEEP 2023: 2023 Clinical Year in Review. “Management of obesity hypoventilation: What sleep medicine providers need to know.” Indianapolis, IN (2023)

## Publication Highlights – Abbreviated

- “A new index, Respiratory Insufficiency index and Modified Early Warning Scores predict extubation failure,” *Canadian Journal of Respiratory Therapy*. (2023)
- “RUNX1 mediates the therapeutic effects of mesenchymal stem cells-derived microparticles in ARDS,” *Clinical Translational Medicine*. (2023)
- “Impact of treating obesity hypoventilation syndrome on body mass index,” *Pulmonology*. (2023)
- “Association of undiagnosed insomnia with objective sleep and clinical outcomes among hospitalized patients,” *Journal of Clinical Sleep Medicine*. (2023)
- “Taking to ‘heart’ the proposed legislation for permanent daylight saving time,” *American Journal of Physiology-Heart and Circulatory Physiology* (2023)
- “Obstructive sleep apnea and pulmonary hypertension: The pendulum swings again,” *Journal of Clinical Sleep Medicine* (2023)
- “Obstructive sleep apnea during REM sleep and hypertension: New findings from a clinical cohort,” *Sleep*. (2023)



## **The Year Ahead: 2024 and Beyond**

We will continue our translational research to elucidate mechanisms by which obesity and intermittent hypoxia (a model of sleep apnea) lead to pulmonary hypertension. We will continue to support our three PhD students. Brandon Carman will likely receive his PhD in 2024, while Kanika Sharma and Heaven Wade are both early in their PhD process.

## **With Gratitude**

I want to convey my sincere thanks for your generosity, which is helping us develop the necessary research to better understand the mechanisms by which obesity and sleep apnea can worsen patient outcomes in pulmonary hypertension, a deadly and progressive disease.