



# Rapid Perioperative Risk Reduction in a Patient with Severe Obstructive Sleep Apnea Undergoing Kidney Transplant Evaluation



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## Introduction

Obstructive sleep apnea (OSA) is associated with increased risk of postoperative pulmonary and cardiovascular complications.<sup>1, 3</sup> The STOP-BANG questionnaire is a validated screening tool for OSA based on patient history (Figure 2).<sup>6</sup> OSA severity is measured by the apnea-hypopnea index (AHI), which measures the average number of apneic and hypoxic events per hour during a polysomnogram.<sup>4</sup> Patients eligible for kidney transplantation (KT) undergo rigorous preoperative assessment and optimization due to the risk of perioperative cardiovascular morbidity and mortality. In this report, we describe a case in which a high-risk KT candidate was identified during his preoperative evaluation and then subsequently diagnosed with severe mixed OSA and rapidly optimized with the initiation of autoPAP.

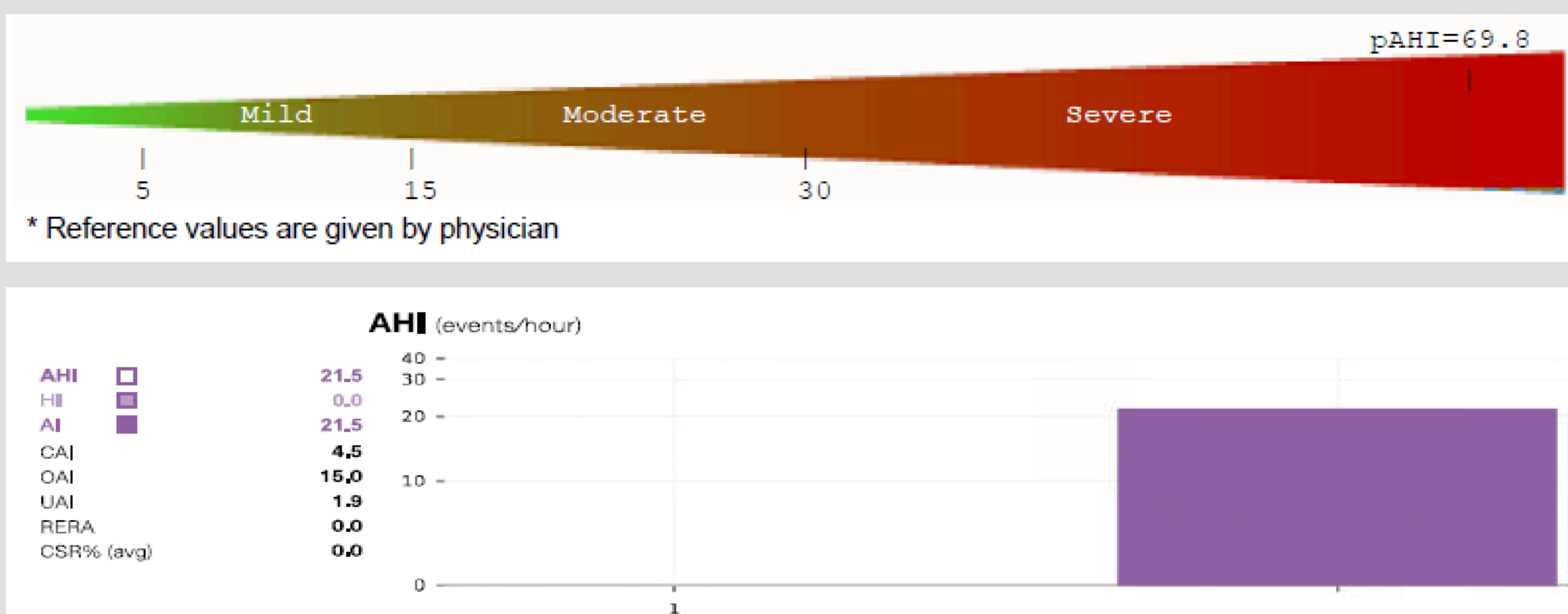
## Case

A 36-year-old male with ESRD, diabetes mellitus (DM), and hypertension was seen in our preoperative clinic for a kidney transplant evaluation. The patient was identified as high-risk for OSA when screened using the STOP-BANG questionnaire (Figure 2). The patient was then referred for an urgent home sleep study, which found that he had severe mixed OSA with an AHI of 69.8 (Figure 1a).

Through a streamlined program aimed at rapid optimization of patients with OSA, the clinic team was able to provide the patient with an auto-adjusting positive airway pressure (AutoPAP) machine within three days of OSA diagnosis. A follow-up sleep study performed two days after initiation of AutoPAP, showed an AHI score improvement from 69.8 to 21.5 (Figure 1b). Five days later, the underwent an uncomplicated live-donor kidney transplantation in February 2023. His follow-up has been unremarkable, with no postoperative complications, and the patient's excellent graft function has led to a near-normal glomerular filtration rate (GFR).

## Images

Figure 1a. The patient's initial score of 69.8 on the AHI scale, indicating his severe sleep apnea. 1b. The patient's AHI score of 21.5 after initiation of AutoPAP.



## Discussion

- Severe OSA poses an increased risk of perioperative morbidity and mortality due to increased incidence of hypoxia, atelectasis, and airway complications.<sup>1, 3, 5</sup>
- Kidney transplants are highly-scrutinized procedures, especially in live-donor transplants, thus patient optimization for these surgeries is critical.
- The bidirectional relationship between OSA and ESRD progression puts kidney transplant recipients at increased risk for cardiovascular complications and mortality.<sup>4</sup>
- Because of the morbidity and mortality associated with these conditions, and the urgent nature of transplant surgery, it is important to optimize these patients as quickly and efficiently as possible.
- Robust preoperative clinics with established patient optimization pathways offer immense value in perioperative risk reduction.

Figure 2. The STOP-BANG questionnaire is a validated screening tool used for assessing OSA risk.<sup>6</sup>

STOP		
Do you SNORE loudly (louder than talking or loud enough to be heard through closed doors)?	Yes	No
Do you often feel TIRED, fatigued, or sleepy during daytime?	Yes	No
Has anyone OBSERVED you stop breathing during your sleep?	Yes	No
Do you have or are you being treated for high blood PRESSURE?	Yes	No
BANG		
BMI more than 35kg/m <sup>2</sup> ?	Yes	No
AGE over 50 years old?	Yes	No
NECK circumference > 16 inches (40cm)?	Yes	No
GENDER: Male?	Yes	No
TOTAL SCORE		
High risk of OSA: Yes 5 - 8		
Intermediate risk of OSA: Yes 3 - 4		
Low risk of OSA: Yes 0 - 2		

## References

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