

Hypoxic Burden in Noxturnal

Deeper insights for sleep apnea assessment

Traditional metrics like the Apnea Hypopnea Index (AHI), remain important, yet it captures only one dimension of sleep disordered breathing.

Hypoxic Burden (HB) goes further by quantifying the total impact of oxygen desaturation events during sleep. By combining both the depth and duration of desaturations, HB provides a more complete picture of sleep apnea related hypoxemia.

Why it matters:

- Strong predictor of cardiovascular morbidity and mortality¹⁻⁵.
- Adds insight into patient impact of sleep apnea, beyond AHI severity.

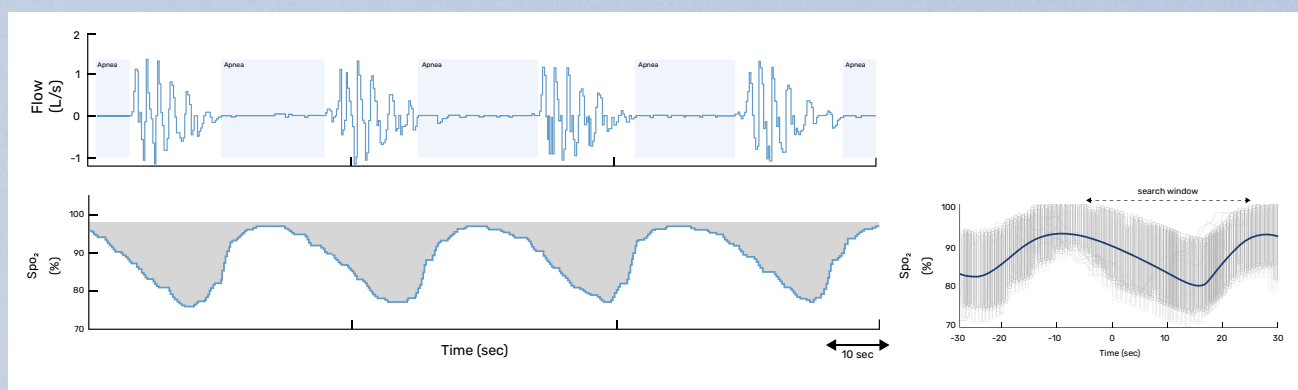


Figure 1: Hypoxic Burden is generated by calculating the area under the desaturation curve for each desaturation that is linked to a respiratory event. These areas are then summed for all events and divided by total sleep time (%min/hour). The average desaturation profile is generated by averaging all event-related desaturations throughout the study period. This profile is used to define a search window that is used to constrain the integration. Figure 1 is adapted for marketing purposes from Labarca G, Vena D, Hu W, et al. Am J Respir Crit Care Med. 2023;208:1134–1146. Copyright © 2023 by the American Thoracic Society. This figure is protected by copyright and is reproduced here for reference only.

What Sets Hypoxic Burden in Noxturnal Apart

With Noxturnal software, Hypoxic Burden is provided as an informational parameter only and is calculated in accordance with the scientifically established definition: including only desaturations linked to scored respiratory events¹. This ensures that HB in Noxturnal reflects true sleep apnea-related burden rather than unrelated desaturations.

By pairing precise flow measurements from patented Nox RIP technology with SpO₂ signals, Noxturnal provides a Hypoxic Burden parameter calculated in accordance with the definition by Ali Azarbarzin et al.— ensuring desaturations are linked to respiratory events rather than basic oximetry alone.

1 Azarbarzin A et al. Eur Heart J. 2019;40:1149–1157.
 2 Blanchard M et al. Eur Respir J. 2021;57:2004022.
 3 Azarbarzin A et al. Chest. 2020;158:739–750.
 4 Kim JS et al. Thorax. 2020;75:57–63.
 5 Jackson CL et al. Thorax. 2021;76:704–713.



Ventilatory Burden

Redefining sleep apnea assessment

Traditional metrics like AHI focus only on the number of apneas and hypopneas, weighing them equally regardless of duration or severity. However, they do not capture how reduced the airflow is or how long events last – nor the cumulative strain these disruptions place on a patient's breathing.

Ventilatory Burden (VB) measures the actual reduction in airflow during respiratory events – not delayed effects like desaturation, giving clinicians a more detailed view of disease severity.

Why it matters:

- Captures true airflow reduction by measuring hypoventilation directly, not delayed SpO₂ effects.
- Adds depth beyond AHI by integrating duration, depth, and frequency of events.
- VB has been shown to predict cardiovascular and all-cause mortality¹⁻³.

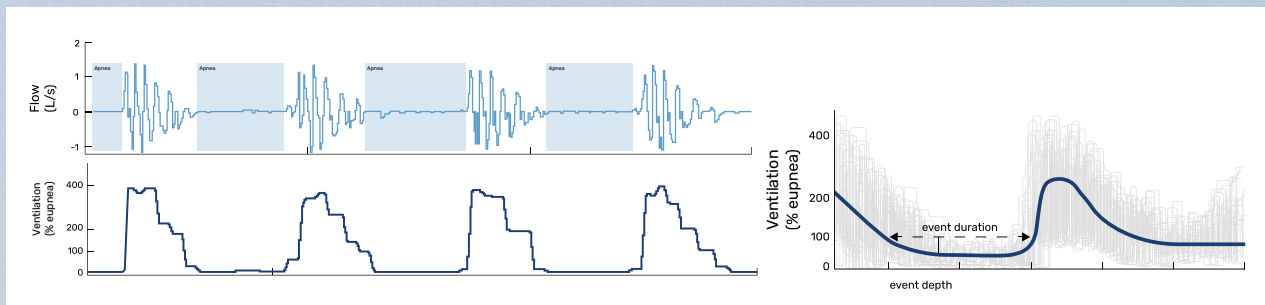


Figure 2: Ventilatory Burden is derived by generating a minute ventilation signal from flow data, then combining event depth, duration, and rate to calculate the total burden (% eupnea min/hour). The average respiratory event, in terms of ventilation, is generated and used to define the average event duration and average event depth. Figure 2 is adapted for marketing purposes from Labarca G, Vena D, Hu W, et al. Am J Respir Crit Care Med. 2023;208:1134–1146. Copyright © 2023 by the American Thoracic Society. This figure is protected by copyright and is reproduced here for reference only.

Powered by Precise Nox Flow Measurement

Ventilatory Burden depends on precise flow measurement, like that available with patented Nox RIP flow technology. VB has been shown to better reflect the true physiological burden of sleep apnea and has been shown to be independently predictive of cardiovascular and all-cause mortality.

With Nox, clinicians gain the tools to move beyond counting events – to truly measure their burden

¹ Parekh et al. Am J Respir Crit Care Med. 2023;208:1216–1226.

² Lechat & Eckert. Am J Respir Crit Care Med. 2023;208:1153–1155.

³ Labarca G, Vena D, Hu W, et al. Am J Respir Crit Care Med. 2023;208:1134–1146.

Disclaimers:

Nox Flow is a calibrated RIP flow signal from Nox Medical devices.

Noxturnal is a CE-marked and FDA-cleared medical device intended for clinical use under the supervision or direction of qualified healthcare professionals. For more information, including intended use, contraindications, and instructions for use, please consult with the manufacturer's documentation at noxmedical.com/downloads.

Ventilatory Burden is part of FDA cleared software medical device DeepResp K241960 currently available in the United States only.