

International, prospective, multicenter, observational studies

An [international, prospective, multicenter, observational study](#) was conducted across 74 ICUs in 26 countries, including adult patients with ABI (e.g., traumatic brain injury, intracranial hemorrhage, subarachnoid hemorrhage, and acute ischemic stroke), who required ICU [admission](#) and invasive [mechanical ventilation](#). Ventilatory settings were recorded daily during the first week and on days 10 and 14. ICU and 6-month mortality and 6-month neurological outcomes were evaluated.

On admission, 2095 recruited patients (median age 58 [interquartile range 45-70] years, 66.1% male) had a median plateau pressure (Pplat) of 15 (13-18) cmH₂O, tidal volume/predicted body weight 6.5 (5.7-7.3) mL/Kg, driving pressure 9 (7-12) cmH₂O, and positive end-expiratory pressure 5 (5-8) cmH₂O, with no modifications in case of increased intracranial pressure (> 20 mmHg). Significant differences in practices were observed across different countries. The majority of these ventilatory settings were associated with ICU mortality, with the highest hazard ratio (HR) for Pplat (odds ratio 1.50; 95% confidence interval, CI: 1.27-1.78). The results demonstrated a consistent association with 6-month mortality; a less clear association was observed for neurological outcomes.

Protective ventilation strategies are commonly used in ABI patients but with high variability across different countries. Ventilator settings during ICU stay were associated with an increased risk of ICU and 6-month mortality, but not an unfavorable neurological outcome ¹⁾.

¹⁾

Robba C, Giardiello D, Almondo C, Asehnoune K, Badenes R, Cinotti R, Elhadi M, Graziano F, Helbok R, Jiang L, Chen W, Laffey JG, Messina A, Putensen C, Schultz MJ, Wahlster S, Rebora P, Galimberti S, Taccone FS, Citerio G; VENTIBRAIN study group. [Ventilation](#) practices in acute brain injured patients and association with [outcomes](#): the VENTIBRAIN multicenter observational study. Intensive Care Med. 2025 Feb 24. doi: 10.1007/s00134-025-07808-1. Epub ahead of print. PMID: 39992441.

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