

Intracranial pressure monitoring in older adults with severe traumatic brain injury: questions remain unanswered

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Intracranial pressure monitoring (ICPM) is recommended by the Brain Trauma Foundation (BTF) for managing severe traumatic brain injury (sTBI). However, these recommendations are based on studies that often exclude older adults (OAs) (≥ 65 years of age). As a result, the value of ICPM in OAs remains poorly understood.

In their study, Zangbar *et al* aimed to address this knowledge gap by analyzing morbidity and mortality in OAs with sTBI, treated with or without ICPM, using Trauma Quality Improvement Program (TQIP) data. In a propensity-matched cohort of 2,148 OAs with sTBI, the authors found that ICPM was not associated with reduced mortality. Instead, OAs who received ICPM had longer intensive care unit and hospital stays, as well as increased ventilator days. They concluded that ICPM in OAs with sTBI should be limited as it is linked to higher resource utilization without improvements in outcomes.

We recognize the authors' contribution in addressing this significant knowledge gap in an aging population. However, interpretation of these findings should take the below considerations into account.

First, the BTF guidelines regarding ICPM are level 2B and drawn from studies with a limited population of OAs.¹ The only class 1 study in the BTF by Chesnut *et al* included 24 (7%) patients over the age of 60.² As a result, in clinical practice, adherence to these guidelines remains low for OAs. In Zangbar *et al*'s study, only 12.1% of OAs received ICPM.³ Similarly, a 2021 review of the prospective American Association for the Surgery of Trauma Geriatric TBI multi-center trial found that only 18% of OAs meeting BTF guidelines received an ICPM.⁴ This significant under-representation of OAs in TBI research and low compliance with the BTF guidelines limits the generalizability of the authors' findings and underscores the need for prospective trials focusing on sTBI management in OAs.

Second, the authors attempt to create comparable groups through propensity matching based on demographics, injury characteristics, and trauma center level. However, this method does not account for key prognostic factors, specific to OAs, such as functional status, comorbidities, and frailty.^{5,6} Consequently, the groups may not be truly comparable, limiting the study conclusions.

Third, the study classifies both discharge to skilled nursing facility (SNF) and discharge to

hospice as "unfavorable". However, these two scenarios likely represent distinct clinical care courses. Whether discharge to an SNF constitutes an unfavorable outcome depends on whether it reflects a decline from the patient's pre-injury residence. Furthermore, the study does not account for the role of advanced directives in guiding patient care, which significantly influences clinical decisions and discharge disposition.

Finally, a critical limitation of the study is the absence of neurologic outcomes, which are essential for patient-centered decision-making. Family discussions regarding goals of care for OAs with sTBI often focus on expectations for quality of life, such as cognitive and functional outcomes post-injury, rather than solely on survival. Therefore, without neurologic outcome data, the applicability of these findings in clinical decision-making remains limited.

Although this study adds to the growing body of literature that ICPMs in OAs may not confer a mortality benefit, Zangbar *et al* acknowledge the different biases that likely exist in their study due to the use of the TQIP database, and we join them in advocating for future well-designed prospective trials to better address this important question.³

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