

MATTERS ARISING

Open Access



# Physician-led interprofessional pre-hospital teams: does the science hold up?

Ryan Glendwyr Davis<sup>1\*</sup>, Pieter Francois Fouche<sup>1</sup> and Belinda Flanagan<sup>1</sup>

Dear Editor,

We read with interest the systematic review and meta-analysis by Lavery et al. evaluating the targeted deployment of physician-led interprofessional prehospital teams for critically ill and injured patients [1]. While this review addresses an important clinical question, we have significant concerns about the robustness of its conclusions due to reliance on observational studies, inadequate adjustment for confounding factors, and misleading causal language.

Firstly, the review predominantly included observational studies, with only one randomised controlled trial (RCT) by Garner et al. [2]. Crucially, Garner et al. demonstrated no significant mortality benefit using intention-to-treat (ITT) analysis. This is important, as ITT analysis preserves randomisation and reduces bias potential when compared to As-Treated (AT) analysis. Lavery et al. conveyed a degree of certainty about the casual benefits of physician-led teams that possibly overstated their findings. Observational studies inherently carry substantial risks of bias and confounding, making causal conclusions inappropriate. We acknowledge that Lavery et al. partially addressed this limitation in their discussion.

Secondly, several included studies compared physician-staffed helicopter emergency medical services (HEMS) directly against ground-based EMS staffed by paramedics, introducing major confounding by differences in transport modality, equipment availability, response times, and crew composition. Galvagno et al. highlighted significant methodological issues and confounding

effects inherent in comparisons involving HEMS versus ground EMS, emphasizing the difficulty in isolating the true impact of physician involvement alone [3]. The authors noted this potential confounding as a limitation, though the severity of its implications for their conclusions was understated.

Thirdly, injury severity was inconsistently measured or adjusted for, despite its critical importance in determining outcomes. Only nine studies (39%) reported injury severity scores (ISS), with few using validated physiological scores such as the Trauma and Injury Severity Score (TRISS), Revised Trauma Score (RTS), or Shock Index. Tracey et al. argue for the essential role of these adjustments in critical care research to ensure accurate outcome evaluation [4]. The limited use of such adjustments in Lavery et al.'s study represents a substantial methodological concern.

Additionally, Lavery et al. reported significant statistical heterogeneity ( $I^2 = 73\%$ ), indicating substantial variability across studies regarding populations, interventions, and outcomes. Such heterogeneity limits the generalizability and applicability of their pooled results and weakens confidence in their conclusions for guiding policy or clinical practice. While this heterogeneity was recognized as a limitation by Lavery et al., its implication for clinical decision-making requires clearer emphasis.

Lastly, Lavery et al. consistently employed causal language throughout their discussion and conclusions. Given the predominantly observational evidence base, this approach risks overstating findings, potentially misleading clinicians, policymakers, and guideline developers. Del Junco et al. explicitly underscores the importance of cautious interpretation of observational prehospital trauma studies, clearly distinguishing association from

\*Correspondence:

Ryan Glendwyr Davis  
[ryan.davis@utas.edu.au](mailto:ryan.davis@utas.edu.au)

<sup>1</sup>School of Paramedicine, University of Tasmania, Lilyfield, NSW, Australia



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

causation to prevent premature or misguided clinical and policy decisions [5].

Future research should employ rigorous methodologies, including randomised controlled trials or carefully matched observational studies comparing physician-led and similarly skilled non-physician teams under comparable conditions. Comprehensive adjustment for confounders such as injury severity, comorbidities, patient demographics, transport modality, and response timing is essential. These methodological improvements would yield more internally valid and reliable results to inform prehospital care policies.

We hope this letter will lead to clarification of the concerns raised and encourage the authors to specify in detail some of the limitations of the paper to avoid misguided clinical and policy decisions that may occur as a result.

#### Author contributions

R.G.D and P.F.F. contributed to the development and writing of the letter. All authors participated in the discussion of the concepts contained within the letter and in its editing.

#### Funding

Declaration.

This letter received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

#### Data availability

No datasets were generated or analysed during the current study.

#### Declarations

#### Competing interests

The authors declare no competing interests.

Received: 17 March 2025 / Accepted: 18 March 2025

Published online: 27 March 2025

#### References

1. Lavery MD, Aulakh A, Christian MD. Benefits of targeted deployment of physician-led interprofessional pre-hospital teams on the care of critically ill and injured patients: a systematic review and meta-analysis. *Scand J Trauma Resusc Emerg Med*. 2025;33(1). <https://doi.org/10.1186/s13049-024-01298-8>.
2. Garner AA, Mann KP, Fearnside M, Poynter E, GebSKI V. The head injury retrieval trial (HIRT): a single-centre randomised controlled trial of physician prehospital management of severe blunt head injury compared with management by paramedics only. *Emerg Med J*. 2015;32(11):869–75. <https://doi.org/10.1136/emered-2014-204390>.
3. Galvagno SM Jr, Sikorski R, Hirshon JM, Floccare D, Stephens C, Beecher D, Thomas S. Helicopter emergency medical services for adults with major trauma. *Cochrane Database Syst Rev*. 2015;12CD009228. <https://doi.org/10.1002/14651858.CD009228.pub3>.
4. Tracy A, Salluh JIF, Buanes EA, Dongelmans DA, Finazzi S, Vijayaraghavan BKT, Lone N, et al. The case for an international severity of illness scoring system. *Crit Care Sci*. 2025;37:e20250293.
5. Del Junco DJ, Fox EE, Camp EA, Rahbar MH, Holcomb JB, PROMMTT Study Group. Seven deadly sins in trauma outcomes research: an epidemiologic post mortem for major causes of bias. *J Trauma Acute Care Surg*. 2013;75:S97–103.

#### Publisher's note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.