

From routine to rational: making airway decisions during cardiac arrest auditable, adaptive, and globally implementable

Mulavagili Vijayasimha^{a,*}, Mulavagili Srikanth^b

To the editor,

We read with interest Utami and Semedi's Perspective/Viewpoint on whether intubation during cardiac arrest should be "routine" or "rational," published in *Emergency and Critical Care Medicine (ECCM)*^[1]. The question is timely, but the field risks repeating an unproductive binary—endotracheal intubation (ETI) versus supraglottic airway (SGA)—when the more decisive determinant of patient benefit is often the quality and context of airway delivery: competence, compression interruption, ventilation control, and physiologic monitoring.

Multiple contemporary datasets suggest that average effects of advanced airway choices are modest, while *context effects*—system capability, training intensity, and interruption discipline—are large.^[2, 3] If a registry labels both scenarios as "ETI," it may be pooling fundamentally different exposures: (1) a high-skill, time-bounded ETI performed without meaningful deterioration in chest-compression fraction and followed by controlled ventilation, versus (2) prolonged multi-attempt laryngoscopy with excessive pauses and unrecognized hyperventilation. These are not ethically or biologically equivalent interventions; they should not be interpreted as such in evidence synthesis.

We propose that ECCM's "routine vs. rational" debate can be advanced by explicitly defining *rational airway management* as an adaptive decision rule that is measurable, auditable, and feasible across heterogeneous systems—including low- and middle-resource settings. This matters because global emergency systems are increasingly asked to implement guideline-level resuscitation quality without uniform access to high-frequency ETI opportunities, simulation infrastructure, or advanced airway supervision.

We suggest a pragmatic, equity-compatible framework that converts airway choice into an auditable quality intervention:

- (1) Interruption budget (patient safety constraint): Airway attempts must remain within a predefined "no-flow/low-flow" budget—operationalized as a time ceiling and attempt limit that prioritizes continuous compressions. This protects against the most preventable harm mechanism: loss of coronary and cerebral perfusion during extended pauses.
- (2) Competence threshold (system readiness constraint): ETI should be first-line only where teams demonstrate reproducible performance targets (e.g., high success within ≤ 2 attempts, minimal interruption), achieved via competency-based training and ongoing retraining.^[2] Where that competence is not demonstrably achieved, SGA-first is not a "compromise"—it is a rational, safety-first allocation of complexity to capability.
- (3) The current evidence increasingly supports that rather than measuring static end-tidal carbon dioxide (EtCO₂) thresholds, EtCO₂ trajectory assessment over time may provide a better indicator of physiological status during resuscitation. There are multiple implications for the clinical use of EtCO₂ trajectory assessment for ventilation management, assessment of perfusion status, and identification of patients who achieve return of spontaneous circulation at an early point during resuscitation treatment.^[4, 5] Thus, with the growing importance given to continuous physiological verification over time (the use of dynamic EtCO₂ trajectory assessment), it is noteworthy that this theme is in keeping with the International Liaison Committee on Resuscitation Consensus on Science and Treatment Recommendations, which emphasize a reduction in interruptions, minimization of hyperventilation, and use of real-time physiological feedback to assist providers with advanced life support treatment decisions.^[6, 7]

Research studies indicating a high rate of survival when airway practices change have demonstrated that system performance at baseline-sensitively directly affects both the magnitude and the direction of the benefits produced by changing to these airway practices.^[3] In this context, it may not be as justifiable to advocate for an "always ETI" or "always SGA" rule as it is to advocate for the use of a capability-linked algorithm that limits interruptions and promotes the use of competence and physiology feedback to identify when "silent failures" have occurred. Ethics of implementation should be part of any global journal. An ETI-first recommendation, without emphasizing competence requirements, could lead to the unintentional exporting of risks to systems in which intubation has historically been performed under limited supervision and subsequently create a

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

^aUniversity Institute of Allied Health Science, Department of Medical Laboratory Sciences, Chandigarh University, Mohali, Punjab, India, ^bPandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Department of Microbiology, Rohtak, Haryana, India.

*Corresponding author. Address: University Institute of Allied Health Science, Department of Medical Laboratory Sciences, Chandigarh University, NH-05 Chandigarh-Ludhiana Highway, Gharuan, Mohali 140413, Punjab, India. E-mail address: vijaya.e19133@cumail.in (M. Vijayasimha). Copyright © 2026 The Author(s). Published by Wolters Kluwer Health, LLC.

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

Emergency and Critical Care Medicine (2026) 6:2

Received: 29 December 2025; Accepted: 12 February 2026

Published online: 14 July 2026

<http://dx.doi.org/10.1097/EC9.000000000000181>

disparity where the highest-risk patients are provided an unreliable level of performance. Conversely, to facilitate a competence-gated policy, patient safety and workforce issues must be acknowledged, with a facility being afforded the opportunity to obtain ETI-first status through demonstrable training outcomes.^[2]

To make airway evidence implementable rather than perpetually debated, future work should standardize “airway exposure” reporting across trials, registries, and quality programs:

- (1) Attempt count and time-to-ventilation (and whether compressions were interrupted)
- (2) Ventilation strategy (rate, tidal strategy where feasible) and hyperventilation safeguards
- (3) Waveform capnography availability and prespecified EtCO₂ trend features^[4, 5]
- (4) Training intensity and competence metrics (not just provider category)^[2]

Importantly, studies should evaluate airway bundles (device + interruption control + ventilation targets + capnography use + competency programs) rather than isolating device labels. This approach is more likely to yield transportable, health system–relevant recommendations.^[8]

The transition from conventional to rational airway management has been widely supported.^[1] The next step is to provide a definition for rational airway management. To meet this goal, we need to create an auditable, adaptive decision-making rule that provides safety at all resource levels and decreases the incidence of avoidable injury while enabling high-performing systems to maximize the benefits of advanced airway management. By reframing airway selection as a quality improvement effort, which is limited by interruption budgets, competence levels, and physiological responses, we may resolve the contentious history around airway management and come to a globally accepted and utilized form of airway management.

Conflict of interest statement

The authors declare no conflict of interest.

Author contributions

All authors contributed to the conception and writing of the manuscript and approved the final version.

Funding

None.

Ethical approval of studies and informed consent

Not applicable.

Acknowledgements

None.

References

- [1] Utami NP, Semedi BP. Intubation in cardiac arrest: a routine or rational lifesaving act?. *Emerg Crit Care Med*. 2025;5(4):172–174. doi:10.1097/ec9.0000000000000164.
- [2] Appelboom T, Laing S, Lang N. Endotracheal intubation during cardiac arrest by critical care paramedics: a service evaluation of success rates following structured education. *Scand J Trauma Resusc Emerg Med*. 2025;33(1):138. doi:10.1186/s13049-025-01444-w
- [3] Nassal MMJ, Yang BY, Hall J, et al. Advanced airway practice patterns and out-of-hospital cardiac arrest outcomes. *JAMA Netw Open*. 2025;8(9):e2532334. doi:10.1001/jamanetworkopen.2025.32334
- [4] Nassal MMJ, Elola A, Aramendi E, et al. Temporal trends in end-tidal capnography and outcomes in out-of-hospital cardiac arrest: a secondary analysis of a randomized clinical trial. *JAMA Netw Open*. 2024;7(7):e2419274. doi:10.1001/jamanetworkopen.2024.19274
- [5] Greif R, Bray JE, Djävär T, et al. 2024 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations: summary from the basic life support; advanced life support; pediatric life support; neonatal life support; education, implementation, and teams; and first aid task forces. *Circulation*. 2024;150(24):e580–e687. doi:10.1161/CIR.0000000000001288
- [6] Wyckoff MH, Greif R, Morley PT, et al. 2022 international consensus on cardiopulmonary resuscitation and emergency cardiovascular care science with treatment recommendations: summary from the basic life support; advanced life support; pediatric life support; neonatal life support; education, implementation, and teams; and first aid task forces. *Circulation*. 2022;146(25):e483–e557. doi:10.1161/CIR.0000000000001095
- [7] Drennan IR, Berg KM, Böttiger BW, et al. Advanced life support: 2025 International Liaison Committee on Resuscitation consensus on science with treatment recommendations. *Circulation*. 2025;152(16_suppl_1):S72–115. doi:10.1161/cir.0000000000001360
- [8] Penketh J, Nolan JP. Airway management during cardiac arrest. *Curr Opin Crit Care*. 2023;29(3):175–180. doi:10.1097/mcc.0000000000001033

How to cite this article: Vijayasimha M, Srikanth M. From routine to rational: making airway decisions during cardiac arrest auditable, adaptive, and globally implementable. *Emerg Crit Care Med*. 2026;6(2):82–83. doi: 10.1097/EC9.0000000000000181