

PHYSIOLOGICAL VARIABILITY DURING PREHOSPITAL STROKE CARE: WHAT MONITORING AND INTERVENTIONS ARE USED?

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1. Introduction and Aims

- Stroke is a leading cause of morbidity and mortality globally (1).
- Early recognition, diagnosis, and intervention are associated with improved patient outcomes in acute stroke.
- Physiological monitoring and interventions form an important part of hospital-based stroke care but use in prehospital care is variable (2).
- An important prehospital consideration is the balance of rapid hospital transfer against pre-hospital monitoring and intervention (Figure 1).

This systematic review explores the use of pre-hospital physiological monitoring and management in acute stroke and their effect on patient outcomes.

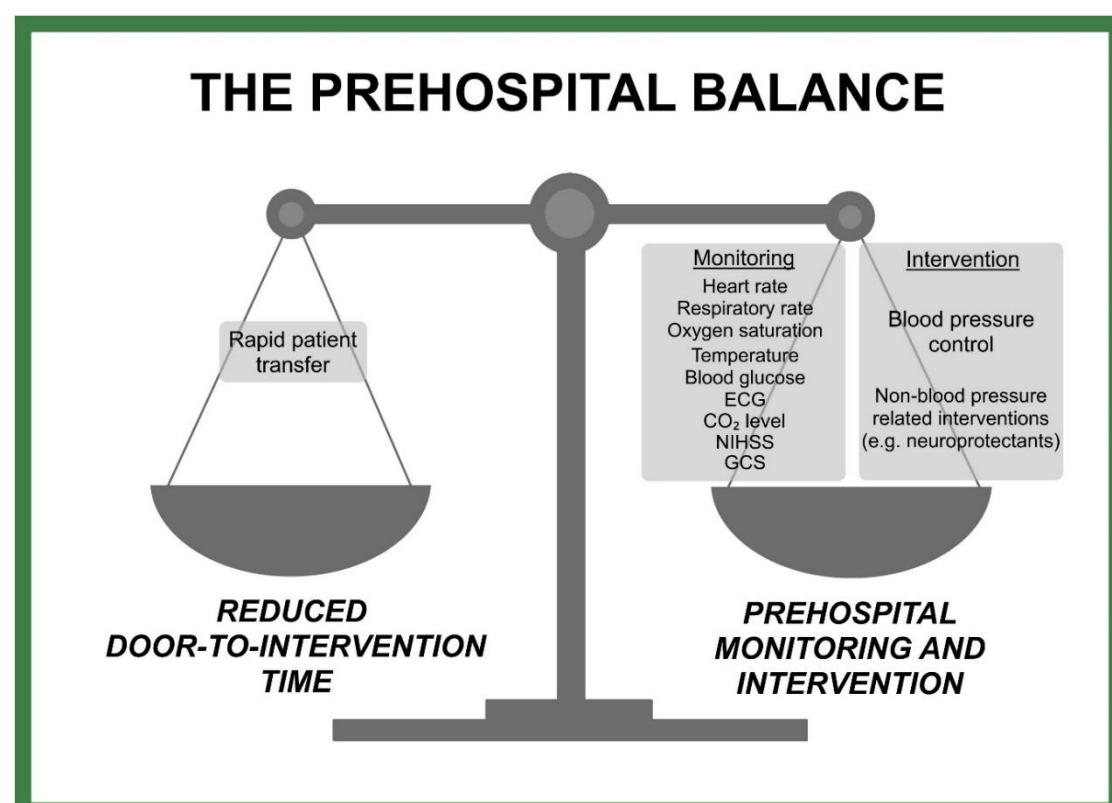


Figure 1. A schematic diagram of the prehospital balance between reduced door-to-intervention time and prehospital monitoring & intervention.

2. Methods

- The protocol for this systematic review was prospectively registered on PROSPERO (CRD42022308991).
- A systematic search of MEDLINE, EMBASE, CINAHL, and CENTRAL databases was performed in August 2022.
- Cascade referencing was utilised to identify relevant records.
- Data was screened by two independent reviewers and full-text analysis was performed for relevant records.
- Included relevant records were categorised into two themes: “physiological monitoring intervention” and “pharmacological therapy intervention”.

3. Results

- 741 records were identified using the search strategy and 19 studies were retained following screening, Figure 2.
- Nine records were related to physiological monitoring interventions, including blood pressure (BP) monitoring, heart rate variability (HRV), and EtCO₂.
- Five records investigated the effects of pharmacological interventions on physiological parameters, including the use of prehospital BP antihypertensive agents, magnesium sulfate administration, and oxygen administration.

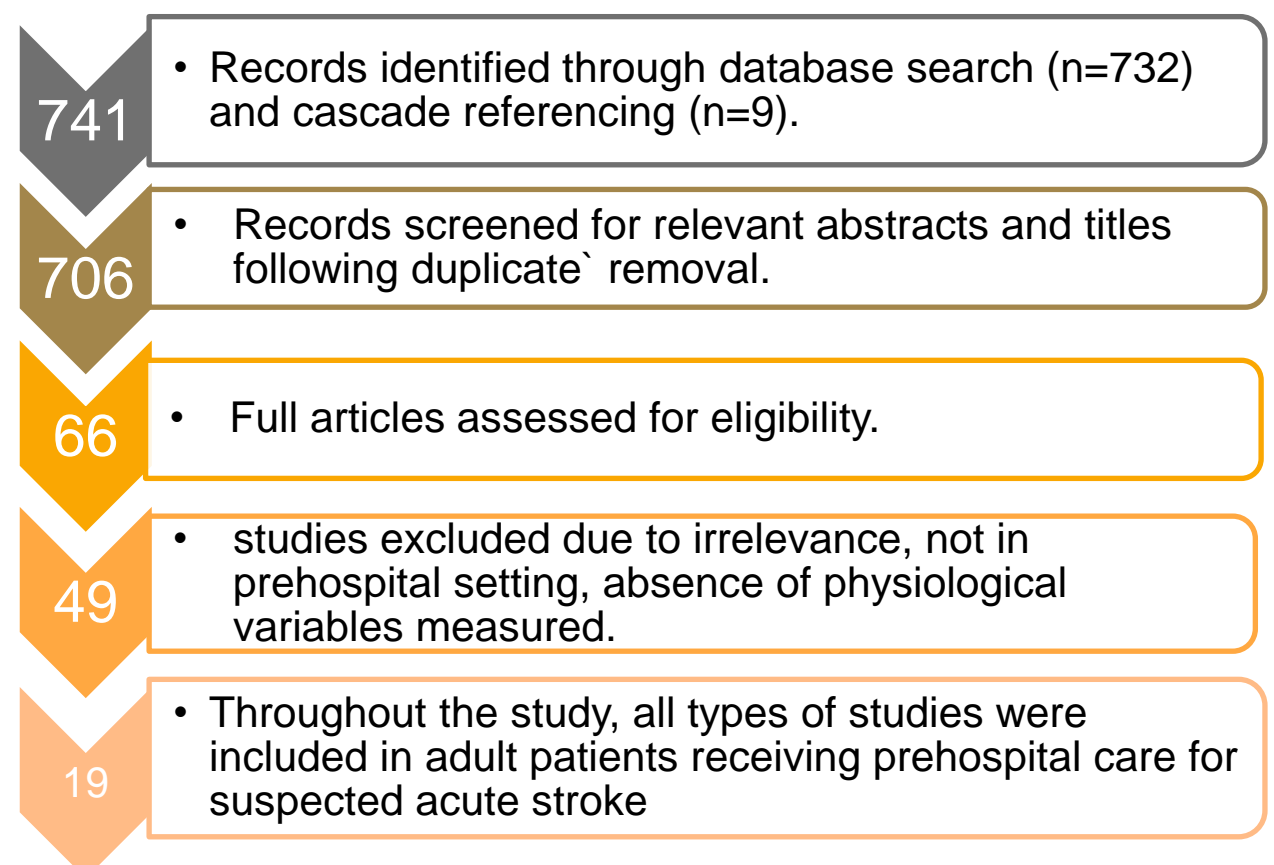


Figure 2. An illustration of the screening performed for retrieved records to assess suitability for inclusion in the systematic review.

4. Conclusion

- Prehospital physiological parameter monitoring is limited amongst published literature.
- Prehospital BP and HRV monitoring have been successfully performed, but further research is required into the clinical application and associated benefits of these measures is indicated.
- Multiple studies have demonstrated the feasibility of prehospital-initiated pharmacological interventions in stroke.
- Readily-available prehospital monitoring, such as capnography, have not been described in the existing literature for acute stroke.

References

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 (2) Sammut-Powell C, Ashton C, Paroutoglou K, Parry-Jones A. Differences in Characteristics and Ambulance Pathway Adherence Between Strokes and Mimics Presenting to a Large UK Centralized Hyper Acute Stroke Unit (HASU). *Front Neurol*. 2021;12:646015.