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POSTER PRESENTATION

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Association of Early Versus Late Epinephrine Administration With Outcomes After Pediatric Out-of-Hospital Cardiac Arrest: A Systematic Review and Meta-analysis

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Background

The optimal timing of epinephrine administration in pediatric out-of-hospital cardiac arrest (OHCA) remains controversial.

Objectives

To compare early (≤15 min) versus late (>15 min) epinephrine administration and clinical outcomes in pediatric OHCA.

Methods

- **Databases:** PubMed, Web of Science, Embase, Cochrane CENTRAL, and Scopus.
- **Comparison:** early (≤15 min) versus late (>15 min) epinephrine administration in children (<18 years) with OHCA.
- **Primary outcome:** 1-month survival.
- **Secondary outcomes:** favorable neurological outcome (Pediatric Cerebral Performance Category [PCPC] score 1–3) and return of spontaneous circulation (ROSC).
- **Analysis:** risk ratios (RRs) pooled using a Mantel-Haenszel fixed-effect model.
- **Subgroups:** traumatic OHCA (hemorrhagic vs. non-hemorrhagic shock) and alternative timing thresholds (≤20 min, ≤30 min).

Results

Seven studies involving 2,807 children were included. Early epinephrine (≤15 min) was associated with higher:

RR 3.73
1-month survival
95% CI 2.49–5.57; P<0.00001

RR 6.47
Favorable neurological outcome
95% CI 2.88–14.52; P<0.00001

RR 1.71
Return of spontaneous circulation
95% CI 1.28–2.28; P=0.0003

Subgroup analysis	RR	95% CI	Significance
Traumatic OHCA, hemorrhagic shock (ROSC)	1.43	1.12–1.83	**Significant**
Traumatic OHCA, non-hemorrhagic shock (ROSC)	1.83	1.35–2.48	**Significant**
Survival, threshold ≤20 min	1.60	0.74–3.47	**Not significant**
Survival, threshold ≤30 min	1.25	0.74–2.11	**Not significant**

In traumatic OHCA, early epinephrine improved ROSC but not survival or neurological outcomes. With the ≤20 or ≤30 min thresholds, the survival benefit became non-significant.

Conclusion

Epinephrine administration within 15 minutes was associated with improved survival, neurological outcomes, and ROSC in pediatric OHCA, whereas benefits were not observed beyond 15 minutes. Despite efforts to address resuscitation time bias, prospective studies are needed to define the optimal timing of epinephrine administration.