

Supplemental Material

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Supplemental Tables

Supplemental Table 1. Search Strategy MEDLINE

MEDLINE (Medical Literature Analysis and Retrieval System Online) via PubMed search for RCTs examining ECPR vs conventional CPR for OHCA*

| Search | Query | # of Citations |
|--------|---|----------------|
| #1 | “Out-of-Hospital Cardiac Arrest” [MeSH Terms] OR (“out” [All Fields] AND “hospital” [All Fields] AND (“cardiac” [All Fields] OR “cardiopulmonary” [All Fields] OR “heart” [All Fields]) AND “arrest*” [All Fields]) OR “Ventricular Fibrillation” [MeSH] OR (“ventricular” [All Fields] AND “fibrillation*” [All Fields]) | 57,338 |
| #2 | "extracorporeal membrane oxygenation"[MeSH Terms] OR ("extracorpor*" [All Fields] AND "membran*" [All Fields] AND "oxygen*" [All Fields]) OR "ecmo" [All Fields] OR "ECLS" [All Fields] OR ("extracorpor*" [All Fields] AND "life" [All Fields] AND "support*" [All Fields]) OR ("extracorpor*" [All Fields] AND ("resuscita*" [All Fields] OR "resuscitation" [MeSH Terms] OR "cardiopulmonary resuscitation" [MeSH Terms])) OR "ECPR" [All Fields] | 27,503 |
| #3 | “Cardiopulmonary resuscitation” [MeSH Terms] OR “resuscitation cardiopulmonary” [Title/Abstract] OR “CPR” [Title/Abstract] OR “cardiopulmonary resuscitation*” [Title/Abstract] OR “cardiopulmonary resuscitation*” [Title/Abstract] OR “resuscitation cardio pulmonary” [Title/Abstract] OR “code blue” [Title/Abstract] Or “basic cardiac life support” [Title/Abstract] OR “advanced cardiac life support” [Title/Abstract] OR “emergency treatment” [Title/Abstract] OR “ECPR” [Title/Abstract] | 7,117 |
| #4 | ((randomized controlled trial[pt]) OR (controlled clinical trial[pt]) OR (randomized[tiab] OR randomised[tiab]) OR (randomly[tiab]) OR (trial[tiab]) OR (groups[tiab])) NOT (animals[mh] NOT humans[mh]) | 3,222,909 |
| #5 | 1 AND 2 AND 3 AND 4 | 131 |

*This search was conducted on July 5th, 2023

Supplemental Table 2. Search Strategy EMBASE

EMBASE (Excerpta Medica Database) via Ovid search for RCTs examining ECPR vs conventional CPR for OHCA*

| Search | Query | # of Citations |
|--------|--|----------------|
| #1 | exp "Out-of-Hospital Cardiac Arrest"/ OR (out.af. AND hospital.af. AND (cardiac.af. OR cardiopulmonary.af. OR heart.af.) AND arrest*.af.) OR exp "Ventricular Fibrillation"/ OR (ventricular.af. AND fibrillation*.af.) | 108,611 |
| #2 | exp "extracorporeal membrane oxygenation"/ OR (extracorpor*.af. AND membran*.af. AND oxygen*.af.) OR ecmo.af. OR ECLS.af. OR (extracorpor*.af. AND life.support*.af.) OR (extracorpor*.af. AND (resuscita*.af. OR exp resuscitation/ OR exp "cardiopulmonary resuscitation"/)) OR ECPR.af. | 58,541 |
| #3 | exp "Cardiopulmonary resuscitation"/ OR "resuscitation cardiopulmonary".tw. OR CPR.tw. OR "cardiopulmonary resuscitation*".tw. OR "cardiopulmonary resuscitation*".tw. OR "resuscitation cardiopulmonary".tw. OR "code blue".tw. OR "basic cardiac life support".tw. OR "advanced cardiac life support".tw. OR "emergency treatment".tw. OR ECPR.tw. | 159,854 |
| #4 | ((("randomized controlled trial".pt.) OR ("controlled clinical trial".pt.) OR (randomized.tw. OR "randomised".tw.) OR (randomly.tw.) OR (trial.tw.) OR (groups.tw.)) NOT (exp animals/ NOT exp humans/)) | 4,500,545 |
| #5 | 1 AND 2 AND 3 AND 4 | 441 |

*This search was conducted on July 5th, 2023

Supplemental Table 3. Search Strategy Cochrane CENTRAL

Cochrane CENTRAL (Central Register of Controlled Trials) search for RCTs examining ECPR vs conventional CPR for OHCA*

| Search | Query | # of Citations |
|--------|--|----------------|
| #1 | exp "Out-of-Hospital Cardiac Arrest"/ OR (out.af. AND hospital.af. AND (cardiac.af. OR cardiopulmonary.af. OR heart.af.) AND arrest*.af.) OR exp "Ventricular Fibrillation"/ OR (ventricular.af. AND fibrillation*.af.) | 108,611 |
| #2 | exp "extracorporeal membrane oxygenation"/ OR (extracorpor*.af. AND membran*.af. AND oxygen*.af.) OR ecmo.af. OR ECLS.af. OR (extracorpor*.af. AND life.a.f. AND support*.af.) OR (extracorpor*.af. AND (resuscita*.af. OR exp resuscitation/ OR exp "cardiopulmonary resuscitation"/)) OR ECPR.af. | 58,541 |
| #3 | exp "Cardiopulmonary resuscitation"/ OR "resuscitation cardiopulmonary".tw. OR CPR.tw. OR "cardiopulmonary resuscitation*".tw. OR "cardiopulmonary resuscitation*".tw. OR "resuscitation cardiopulmonary".tw. OR "code blue".tw. OR "basic cardiac life support".tw. OR "advanced cardiac life support".tw. OR "emergency treatment".tw. OR ECPR.tw. | 159,854 |
| #4 | ((("randomized controlled trial".pt.) OR ("controlled clinical trial".pt.) OR (randomized.tw. OR "randomised".tw.) OR (randomly.tw.) OR (trial.tw.) OR (groups.tw.)) NOT (exp animals/ NOT exp humans/)) | 4,500,545 |
| #5 | 1 AND 2 AND 3 AND 4 | 441 |

*This search was conducted on July 5th, 2023

Supplemental Table 4. Major Clinical Outcomes at Hospital Discharge, 30 Days, 3 Months, and 6 Months Post ECPR or Conventional CPR in Patients with an Out-Of-Hospital Cardiac Arrest

| Trials | Primary Outcome | Secondary Outcomes | | |
|---------------------|---|--|---|--|
| | Survival with Favorable Neurologic Outcome at 6 months ^a | Survival with Favorable Neurologic Outcome at Hospital Discharge | Survival with Favorable Neurologic Outcome at 30 days | Survival with Favorable Neurologic Outcome at 3 months |
| PRAGUE | | | | |
| ECPR | 39/124 (31.5) | 40/124 (32.3) | 38/124 (30.6) | - |
| Conventional CPR | 29/132 (22.0) | 31/132 (23.5) | 24/132 (18.2) | - |
| INCEPTION ‡¥ | | | | |
| ECPR | 14/70 (20.0) | 14/70 (20.0) | 14/70 (20.0) | 12/68 (17.6) |
| Conventional CPR | 10/63 (15.9) | 13/64 (20.3) | 10/62 (16.1) | 9/63 (14.3) |
| ARREST † | | | | |
| ECPR | 6/14 (42.9) | 6/14 (42.9) | - | 6/14 (42.9) |
| Conventional CPR | 0/15 (0) | 1/15 (6.7) | - | 0/15 (0) |

Abbreviations: CPR = cardiopulmonary resuscitation; ECMO = extracorporeal membrane oxygenation; ECPR = extracorporeal CPR.

Values are n (%). Note: % reflect the proportion among patients with available data and may not correspond to the total randomized population

^aDefined as a Cerebral Performance Category score of 1 or 2 (normal performance or mild disability with independence) on a scale of 1 to 5, with higher scores indicating more severe neurologic disability.

† One patient in the early ECMO group withdrew consent for the continuation of participation on day 3 after randomization

‡ One patient withdrew from the trial before 30 days

¥ One patient was not assessed by an independent neurologist at 30 days

Supplemental Figures

Supplemental Figure 1. Summary of the Cochrane Quality Assessment Risk of Bias 2 (RoB 2) Results Stratified by Risk Domain.

