

INPLASY PROTOCOL

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Conflicts of interest:
None declared.

Resuscitation fluids for patients with risk factors of multiple organ failure: A systematic review and meta- analysis

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Review question / Objective: P: patients with risk factors of multiple organ failure I: balanced crystalloids C: normal saline O: mortality, in-hospital mortality, renal failure, length of ICU stay, length of hospital stay.

Condition being studied: In clinical field, aggressive fluid resuscitation therapy is administered to prevent the progression of multiple organ failures by maintaining tissue and organ perfusion. Normal saline is frequently used, but it has been some concerns. Although large-scale studies with balanced crystalloids have been conducted, they couldn't reach significant conclusions due to the diversity of disease severity. Therefore, we aims to evaluate and identify the best fluid for patients at high risk of multiple organ failure by comparing the effects of normal saline and balanced crystalloids.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 July 2022 and was last updated on 19 July 2022 (registration number INPLASY202270091).

INTRODUCTION

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conclusions due to the diversity of disease severity. Therefore, we aim to evaluate and identify the best fluid for patients at high risk of multiple organ failure by comparing the effects of normal saline and balanced crystalloids.

METHODS

Search strategy: Two researchers separately retrieved any study published until 2021 from the following electronic databases: MEDLINE, EMBASE, and Cochrane Central Register of Controlled Trials (CENTRAL).

Participant or population: Patients with risk factors of multiple organ failure.

Intervention: Balanced crystalloids.

Comparator: Normal saline.

Study designs to be included: No restriction of study designs. Including only original articles.

Eligibility criteria: No restrictions on the starting point of the publication date, the language of the publication, or the type of literature.

Information sources: MEDLINE, EMBASE, CENTRAL.

Main outcome(s): Primary outcome: mortality. Secondary outcome: hospital mortality, renal failure, length of ICU stay, length of hospital stay.

Additional outcome(s): None.

Data management: After removing duplicates, we independently screened the titles and abstracts of all records to identify potentially eligible studies. A full-text review will be performed to determine the final inclusion. In cases of disagreement, they will be included based on mutual agreement.

Quality assessment / Risk of bias analysis: We will assess risk of bias using the Cochrane Risk of Bias Tool.

- Risk of bias (RoB) in RCT
- Risk of Bias by Non-Randomized Studies (RoBANS) in cohort studies.

Strategy of data synthesis: After included studies' characteristics will be summarized, we will perform the meta-analysis. We will analyze the OR with 95% CI for categorical variables and calculate pooled difference of median and SE for continuous variables. For evaluating heterogeneity and publication bias, Higgin's I squared (I^2) statistics and Egger's test will be applied respectively.

Subgroup analysis: We will perform the subgroup analysis by disease severity and indications for fluid resuscitation.

Sensitivity analysis: Sensitivity analysis will be undertaken as deemed appropriate.

Language: No restrictions.

Country(ies) involved: South Korea.

Keywords: Fluid resuscitation, Balanced crystalloids, Multiple organ failure.

Contributions of each author:

Author 1 - Jae Hyun Nam - Conceptualisation, Methodology, Writing original draft.

Author 2 - Hee Jin Kwack - data curation, formal analysis.

Author 3 - Woo Seob Ha - data curation, formal analysis.

Author 4 - Jee-Eun Chung - Conceptualisation, Supervision, Writing original draft.