INPLASY PROTOCOL

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Review Stage at time of this submission: **Preliminary searches.**

Conflicts of interest:
None declared.

Balanced crystalloid versus normal saline, the safety in surgical patients identified by surgical types

Liu, H[1]; Pang, Q[2].

Review question / Objective: **To evaluate the safety and effectiveness of different kinds of fluid used in surgical patients.**
Condition being studied: **Balanced crystalloid and normal saline are routinely used during surgeries. They can potentially influence the acid-base and electrolyte balance. Many studies have investigated the effects of balanced solution and saline in various surgeries, but it is unclear which is better to maintain perioperative stability of internal environment in different types of surgeries.**
Information sources: **The Pubmed, Cochrane Library, Embase, and Web of Science databases were searched from Jan 1980 to march 2022. The references lists of the included studies were checked for potentially eligible articles. All searches were performed without language restrictions. When the data were reported as median and inter-quartile range or graphs, the corresponding authors were contacted to obtain the respective mean and standard deviation. If no response, we transferred the data from median to mean±SD according to the method described by Hozo et al, or transformed the data from graph to numbers using Engauge digitizer software.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 March 2022 and was last updated on 23 March 2022 (registration number INPLASY202230121).

INTRODUCTION

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METHODS

Participant or population: Surgical patients.

Intervention: Balanced crystalloid or balanced crystalloid-based colloid.

Comparator: Saline or saline-based colloid.

Study designs to be included: RCT.

Eligibility criteria: The fluid (balanced crystalloid versus saline, or balanced crystalloid-based colloid versus saline-based colloid) was administered intraoperatively and/or postoperatively for volume replacement, only those trials were considered in which the sole difference involved the presence or absence of a buffer in the fluid between study arms. We excluded studies that compared crystalloid with colloids, studies comparing fluids with different colloid components between arms, studies with hypertonic or hypotonic saline in one arm, or studies with fluid administration only preoperatively.

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Main outcome(s): organ dysfunction (defined in the individual studies).

Additional outcome(s): surrogate measures of organ dysfunction(creatinine, transaminase), acid-base balance and electrolyte (PH, PaO2, PaCO2, base excess, serum sodium, potassium, chloride, lactate), hemostasis(Hb, Hct and osmolarity), coagulation(platelet, PT, aPTT, von Willebrand factor, fibrinogen, and TEG), fluid volume, blood loss, urinary output.

Quality assessment / Risk of bias analysis: The risk of bias was checked by appraising the inclusion of phrases such as "adequate sequence generation", "allocation concealment", "blinding", "incomplete outcome data addressed", "free of selective reporting" and "free of other bias", as recommended by the Cochrane Collaboration.

Strategy of data synthesis: Meta-analysis was performed using Review Manager (RevMan version 5.4; The Cochrane Collaboration,2020). The effect size for continuous data was expressed as the mean difference (MD) with 95% confidence interval (CI). The effect size for dichotomous outcomes was expressed as odds ratio(OR) with 95% CI. The between-study heterogeneity was qualified with the I2 value, a fixed effect model was used in the case of homogeneity (I2 < 50%), and a random effect model was chosen in the case of heterogeneity (I2 ≥ 50%).

Subgroup analysis: Subgroup comparisons were performed when necessary to identify the sources.

Sensitivity analysis: Sensitivity analysis was also performed to test the robustness of the meta-analysis results.

Country(ies) involved: China.

Keywords: crystalloid, colloid, fluid, surgery, orgen function.

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