



## Colloids vs Crystalloids: Its use as Initial Fluids for Managing Acute Hemorrhagic Shock in Pediatric Patients - A Metanalysis

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### INTRODUCTION

For critically ill patients with hemorrhagic shock, the introduction of plasma expanders is essential. Crystalloids reduce plasma oncotic pressure by diluting the plasma protein level, which may cause interstitial edema. On the other hand, colloids have a higher vascular retention due to their large molecule composition, making them potentially more useful for fluid resuscitation, however, may lead to acute kidney injury.

### OBJECTIVES

The objective of the study is to look at the evidence and weigh which among colloids and crystalloids is/are more effective in managing hemorrhagic shock, resulting in shock reversal, improvement of perfusion, prevention of shock recurrence, reduction of ICU and hospital stay and development of adverse reactions.

### METHODOLOGY

Published studies from January 1995 to July 2022 were included using Medline, Pubmed, Cochrane Collaboration, and Science Direct. Visual heterogeneity was assessed by looking at the overlap of confidence intervals in the Forrest plot. The statistical heterogeneity among studies were estimated using chi square test ( $\chi^2$ ) and I<sup>2</sup>.

### RESULTS:

Statistics showed that there is no significant difference exist on proportions of mortality between colloid and crystalloid group. Although not significant, the odds ratio of slightly higher than 1, which implies slightly lower mortality for crystalloid. In terms of ICU stay, it showed that it favored those given with colloid. However, there is no significant difference recorded. In terms of hospital stays, it shows that they favored those given with crystalloid as fluid resuscitation. In terms of ECMO, it shows that it favored those given with crystalloid as fluid resuscitation

### CONCLUSION

With limited studies on pediatric cases and only two study found to satisfy the inclusion criteria, the analysis of fluid resuscitation in hemorrhagic shock revealed that there is inadequate proof to justify the preferential use of colloids or crystalloids. Despite being one of the few studies to attempt to compile information on shock, this study was unable to find sufficient evidence to justify the preferential use of colloids or crystalloids for the treatment of hemorrhagic shock. since there aren't many studies. Large-scale experiments are necessary to compare the efficacy of fluid expansion of colloids and crystalloids in children.

**Keywords:** Hemorrhagic shock, crystalloids, colloids