

CADTH RAPID RESPONSE REPORT: SUMMARY OF ABSTRACTS

Normal Saline versus Ringer's Lactate for Patients with Traumatic Injury: Comparative Clinical Effectiveness

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Research Question

What is the comparative clinical effectiveness of the infusion of normal saline versus Ringer's lactate for patients who have experienced a traumatic injury?

Key Findings

One non-randomized study was identified regarding normal saline versus Ringer's lactate for patients with traumatic injury.

Methods

A limited literature search was conducted on key resources including Medline via Ovid, the Cochrane Library, University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2014 and, April 16, 2019. Internet links were provided, where available.

Selection Criteria

One reviewer screened citations and selected studies based on the inclusion criteria presented in Table 1.

Table 1: Selection Criteria

Population	Any patient who is being treated for any traumatic injury in any setting
Intervention	Normal saline infusion (i.e., 0.9% sodium chloride solution)
Comparator	Ringer's lactate infusion (i.e., lactated Ringer's; sodium lactate solution; Hartmann's solution)
Outcomes	Clinical effectiveness (e.g., survival, adverse events, compatibility with other possible treatment protocols)
Study Designs	Health technology assessments, systematic reviews, meta-analyses, randomized controlled trials, non-randomized studies

Results

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses

are presented first. These are followed by randomized controlled trials and non-randomized studies.

One non-randomized study was identified regarding normal saline versus Ringer's lactate for patients with traumatic injury. No relevant health technology assessments, systematic reviews, meta-analyses, or randomized controlled trials were identified.

Additional references of potential interest are provided in the appendix.

Overall Summary of Findings

One non-randomized study¹ was identified regarding the comparative clinical effectiveness of normal saline versus Ringer's lactate for patients with traumatic injury. The authors of the study found that in patients with traumatic brain injury, Ringer's lactate administration was associated with higher mortality compared to normal saline.¹ In patients without traumatic brain injury, there was no significant difference in mortality rates between normal saline and Ringer's lactate.¹

References Summarized

Health Technology Assessments

No literature identified.

Systematic Reviews and Meta-analyses

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

1. Rowell SE, Fair KA, Barbosa RR, et al. The impact of pre-hospital administration of Lactated Ringer's solution versus normal saline in patients with traumatic brain injury. *J Neurotrauma*. 2016 06 01;33(11):1054-1059.
[PubMed: PM26914721](#)

Appendix — Further Information

Previous CADTH Reports

2. Normal saline versus Ringer's lactate for large volume infusion: comparative clinical effectiveness. (*CADTH Rapid response report: summary of abstracts*). Ottawa (ON): CADTH 2015.
<https://www.cadth.ca/normal-saline-versus-ringer-lactate-large-volume-infusion>.
Accessed 2019 Apr 26.
3. Large volume crystalloid fluid infusion for adults with moderate to severe sepsis: clinical effectiveness and guidelines. (*CADTH Rapid response report: reference list*). Ottawa (ON): CADTH 2015.
<https://www.cadth.ca/large-volume-crystalloid-fluid-infusion-adults-moderate-severe-sepsis-clinical-effectiveness-and> Accessed 2019 Apr 26.

Systematic Reviews and Meta-analyses

Alternative Intervention

4. de Crescenzo C, Gorouhi F, Salcedo ES, Galante JM. Prehospital hypertonic fluid resuscitation for trauma patients: a systematic review and meta-analysis. *J Trauma Acute Care Surg*. 2017 05;82(5):956-962.
[PubMed: PM28257392](#)

Alternative Comparator

5. Blanchard IE, Ahmad A, Tang KL, et al. The effectiveness of prehospital hypertonic saline for hypotensive trauma patients: a systematic review and meta-analysis. *BMC Emerg Med*. 2017 11 28;17(1):35.
[PubMed: PM29183276](#)
6. Wu MC, Liao TY, Lee EM, et al. Administration of hypertonic solutions for hemorrhagic shock: a systematic review and meta-analysis of clinical trials. *Anesth Analg*. 2017 11;125(5):1549-1557.
[PubMed: PM28930937](#)

Randomized Controlled Trials

Alternative Comparator

7. Hassan MH, Hassan W, Zaini RHM, Shukeri W, Abidin HZ, Eu CS. Balanced fluid versus saline-based fluid in post-operative severe traumatic brain injury patients: acid-base and electrolytes assessment. *Malays*. 2017 Oct;24(5):83-93.
[PubMed: PM29386975](#)

Alternative Intervention

8. Semler MW. Balanced crystalloids versus saline in critically ill adults. *N Engl J Med*. 2018 Mar 1;378(9):829-839.
<https://www.ncbi.nlm.nih.gov/pubmed/29485925>

Qualitative Studies

9. Dadoo S, Grover JM, Keil LG, Hwang KS, Brice JH, Platts-Mills TF. Prehospital fluid administration in trauma patients: a survey of state protocols. *Prehosp Emerg Care*. 2017 Sep-Oct;21(5):605-609.
[PubMed: PM28481669](#)

Additional References

10. Barker ME. 0.9% saline induced hyperchloremic acidosis. *J Trauma Nurs*. 2015 Mar-Apr;22(2):111-116.
[PubMed: PM25768968](#)