

Peer Review

Review of: "Upgrading Renal Replacement Therapy Machines in the ICU: A Comparative Observational Study of Heparin vs. Regional Citrate Anticoagulation"

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General Comments

This preprint investigates the comparative performance of heparin and regional citrate anticoagulation (RCA) in Continuous Renal Replacement Therapy (CRRT) within an ICU setting. The study's focus on patient safety, cost-effectiveness, and nursing perspectives is clinically relevant and timely, given the growing adoption of RCA in ICU practices. Overall, the paper is well-structured, and its findings are supported by data. However, some areas require clarification and improvement to enhance its validity and accessibility to the academic and clinical audience.

Strengths

Clinical Relevance: The study addresses a critical topic in ICU management and provides actionable insights into the benefits of RCA, particularly regarding cost-effectiveness, reduced transfusion requirements, and extended filter lifespan.

Clear Results: The results are well-supported by statistical analyses, with significant findings that highlight the advantages of RCA over heparin in terms of CRRT duration, filter lifespan, and costs.

Comprehensive Discussion: The discussion effectively contextualizes the findings within existing literature, while acknowledging limitations and future research directions.

Focus on Nursing Perspectives: The emphasis on reduced nursing interventions and improved patient care is a valuable addition, highlighting the practical implications of adopting RCA.

Methods

The methods section is generally clear, but some aspects require additional details:

Inclusion and Exclusion Criteria: Provide more context about why specific patient groups were excluded, particularly those using alternative anticoagulation methods.

Ethical Approval: While ethical approval is mentioned, it would be useful to elaborate on how patient data were anonymized to ensure confidentiality.

Results

The results are compelling but would benefit from additional granularity:

CRRT Duration and Filter Lifespan: While the p-values indicate significance

Suggestion: Add asterisks or color coding to indicate statistically significant differences.

Conclusion

The conclusion effectively summarizes the study but could be more forward-looking:

Suggestion: Highlight specific next steps for research, such as prospective, multi-center studies to validate these findings and explore long-term patient outcomes (e.g., mortality, renal recovery rates).

Declarations

Potential competing interests: No potential competing interests to declare.