Development of a ROTEM-Guided Transfusion Algorithm in Cardiothoracic Surgery Patients

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Abstract

- Cardiothoracic surgical patients are at an increased risk of bleeding complications
- ROTEM-guided transfusion algorithms vs. traditional labs
- This project aims to develop a blood product management algorithm utilizing ROTEM technology
- ROTEM effects blood product usage, mortality, and cost

Keywords: cardiothoracic, anesthesia, rotational thromboelastometry (ROTEM)

Introduction

Problem Identification

- Traditional coagulation laboratory values (i.e. INR, PT, and aPTT) delay care, lack an all-inclusive examination of coagulation status, and lead to inappropriate transfusion (Cohen et al., 2020)

Significance of the Problem

- Patient outcomes rely heavily on rapidly identifying and managing coagulopathies.
- ROTEM analysis is superior in identifying coagulopathies; however, there continues to be a gap in practice.

Model Identification

John's Hopkins Evidence-Based Practice Model

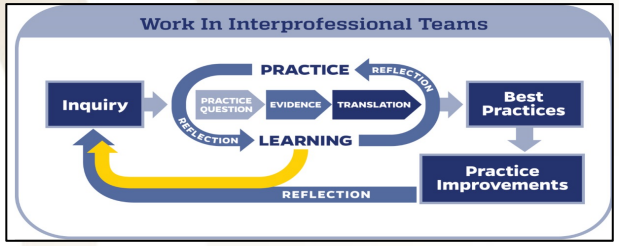

Figure 1. *The Johns Hopkins University EBP Model*

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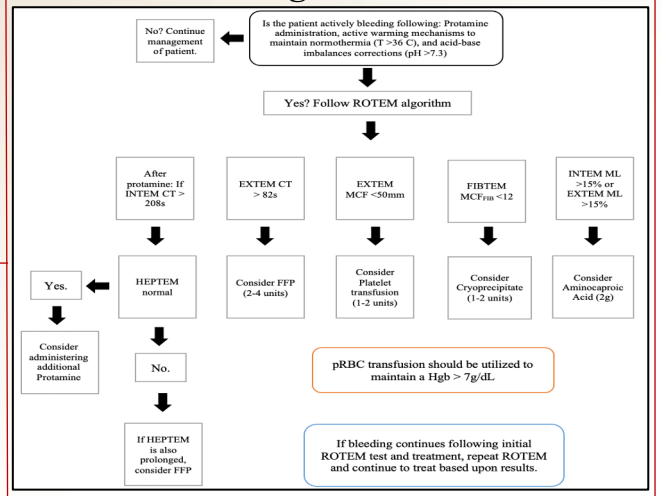
PICO(T) Question

In cardiothoracic surgical patients, how does the use of ROTEM versus traditional coagulation laboratory tests (PT, INR, aPTT, ACT, platelet count, and fibrinogen) affect blood product utilization, patient mortality, and overall cost peri-operatively and post-operatively?

ROTEM-Guided Transfusion Algorithm

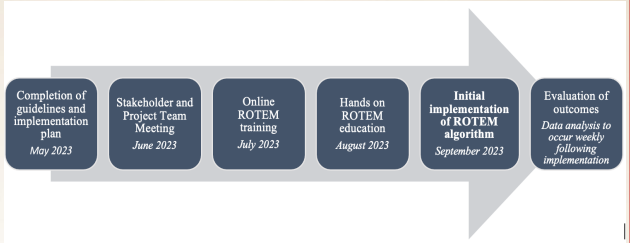


(Snyder, K., 2023)

Outcome Analysis

- EMR review to determine:
  - Blood product administration
  - Mortality rate
  - Cost analysis

Timeline



Evaluation

- Open communication is essential
- Email (daily questions and concerns)
- Monthly Meetings (to identify areas for improvement and discuss what changes can be made to enhance patient outcomes)
- Adjustments will be made as needed to align with the project objectives

Budget

BUDGET

Limitations and Barriers

- Resistance to change
- Lack of stakeholder support (anesthesia and surgeon buy-in)
- Cost of education and training for staff members

Conclusion

- There is a direct correlation between using a ROTEM-guided transfusion algorithm and minimizing blood product utilization, lowering mortality rates, and reducing overall cost.

References

REFERENCES

OTTERBEIN UNIVERSITY