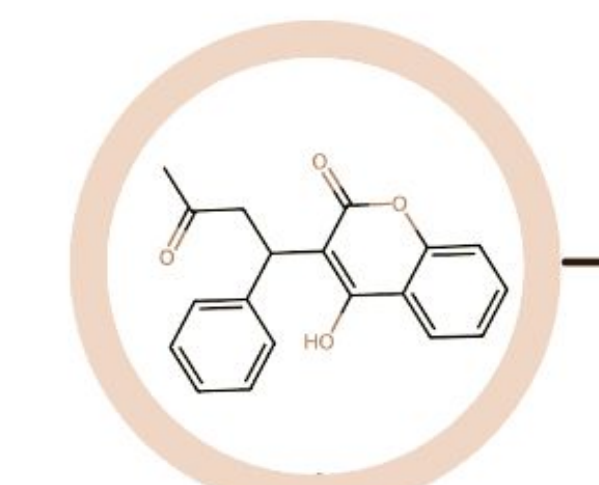
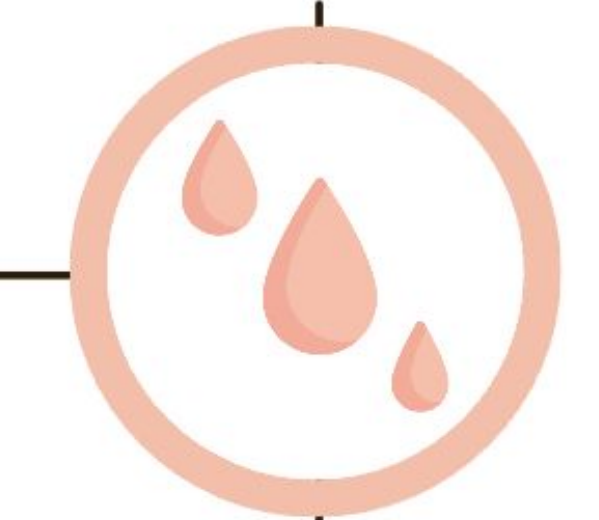


Intro and Background

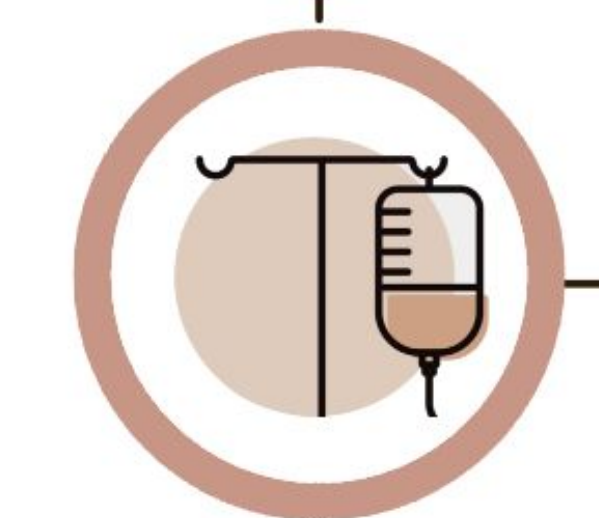


Warfarin
 Competitive inhibitor of Vitamin K (VK) epoxide reductase, preventing conversion of inactive VK to active VK

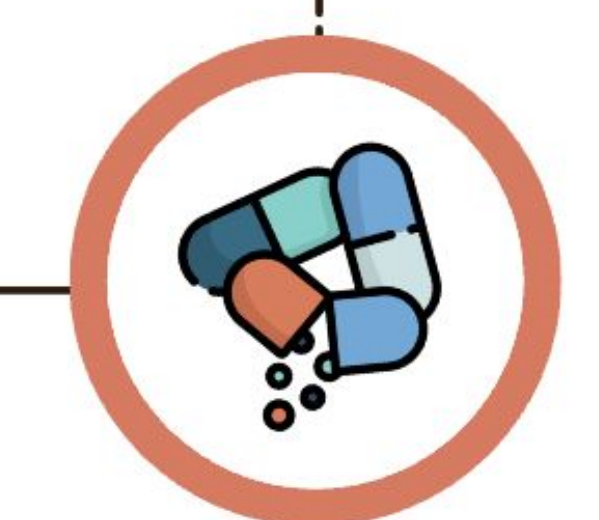
Anticoagulation
 Patients on Warfarin therapy requiring emergent procedures are at high risk of bleeding



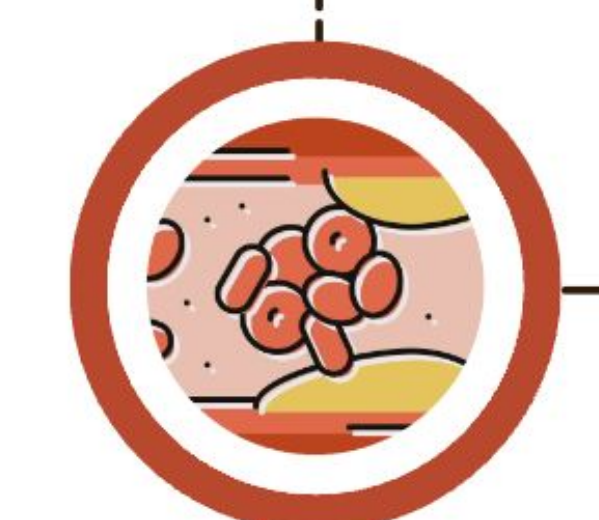
Reversal
 Timely and effective reversal can greatly lower the morbidity and mortality linked to perioperative bleeding in high-risk patients



Treatment
 Vitamin K, followed by infusion of prothrombin complex concentrate (PCC) or fresh frozen plasma (FFP)



Hemostasis
 Rapid reversal of anticoagulation effects of Warfarin restores hemostasis, minimizing bleeding complications



Aims and Hypothesis

- Aim:** To compare the efficacy, safety, and short-term outcomes of PCC versus FFP in reversing Warfarin during the perioperative period
- Hypothesis:** PCCs provide faster and more effective reversal of Warfarin anticoagulation compared to FFPs, making them the preferred choice in urgent surgical situations

Methods

PubMed Search Parameters

- “Prothrombin Complex Concentrate”
- “Fresh Frozen Plasma”
- “Warfarin”

Inclusion Criteria

- Randomized controlled trials
- Retrospective cohort studies
- Published between 2013 and 2024

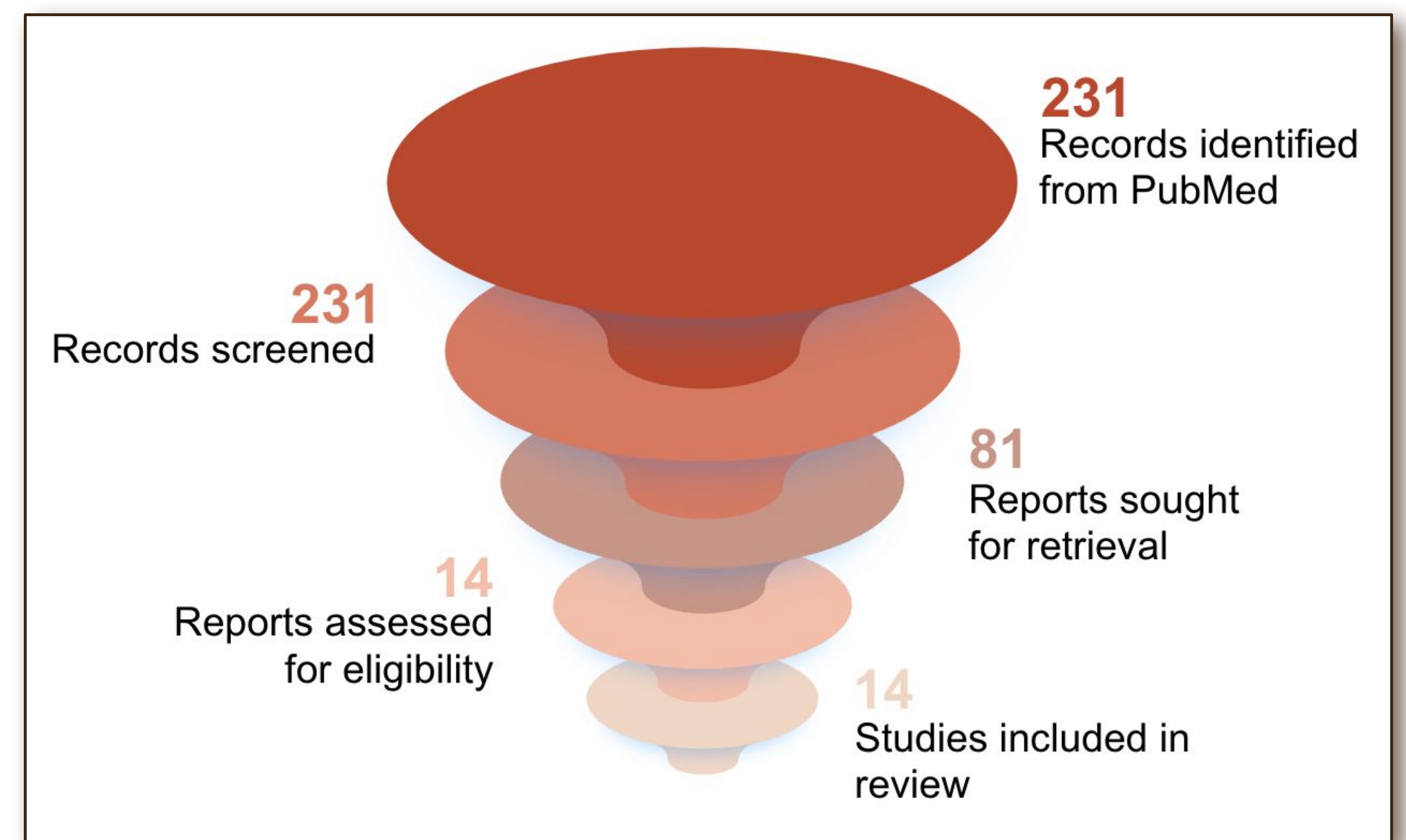


Figure 1: Study selection diagram.

Key Findings

Surgical or Invasive Procedures	Number of Studies	Effective Hemostasis (PCC, Plasma)*	Rapid INR Reduction (PCC, Plasma)*	Authors
Cardiac	3	76.0%, 66.0% Not measured 90.0%, 75.0%	Not measured 62.2%, 9.6% Not measured	Karkouti et al., 2021 Sisti et al., 2020 Bhatt et al., 2018
Multiple/Unspecified	2	90.0%, 75.0% 89.7%, 75.3%	55.0%, 10.0% 55.2%, 9.9%	Goldstein et al., 2015 Refaai et al., 2013

*Values are listed as percentage of patients who achieved effective hemostasis or rapid INR reduction with 4F-PCC and FFP, respectively.

- All studies compared efficacy of 4F-PCC (KCENTRA) to FFP
 - However, most studies did not directly measure effective hemostasis or rapid INR reduction

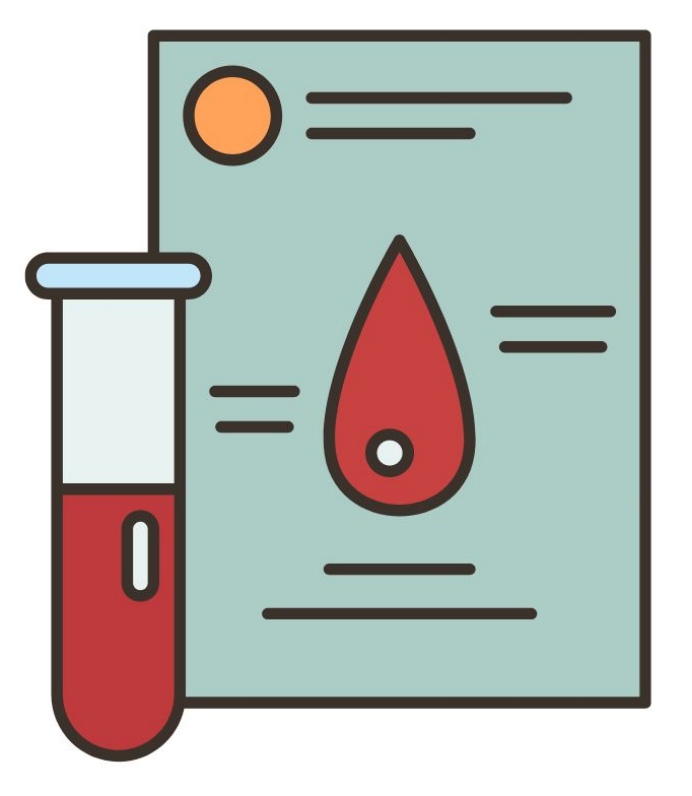
Synthesis

Effective Hemostasis

- Often defined based on clinical judgment, assessing whether bleeding was adequately controlled during and after the intervention
- Achieving effective hemostasis was essential for improving outcomes, with 4F-PCC often outperforming FFP by reducing the need for transfusions, lowering complication rates, and enhancing overall patient recovery.*

Internal Normalized Ratio (INR)

- Test of choice for patients taking VK antagonists (VKA)
 - Dimensionless measurement of the time it takes for blood to form a blood clot
 - Normal INR: 0.8-1.1
 - Therapeutic INR for patients on VKA: 2.0-3.0
 - Levels above 4.9 are critical and raise bleeding risk
- While PCC can achieve faster INR correction, FFP is still widely used due to its availability and cost-effectiveness.*



Conclusions

- 4F-PCC consistently outperformed FFP in rapid INR reduction and reducing transfusions
- **Both** treatments show similar safety profiles with no significant difference in thromboembolic events
- 4F-PCC is more effective for **urgent** coagulopathy correction and hemostasis in surgical settings

Future Directions

- Larger randomized trials to confirm long-term safety and efficacy of 4F-PCC
- Explore optimal dosing strategies and cost-effectiveness of 4F-PCC
- Personalized anticoagulation and reversal approaches for improved outcomes

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