Improved Operational Efficiencies With Pathogen Reduced Cryoprecipitated Fibrinogen Complex vs. CryoAHF

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INTRODUCTION

Due to the potential risk of infectious transmission, the 4–6-hour shelf-life of cryoprecipitate (CryoAHF) prevents thawed storage, often delaying fibrinogen supplementation during major surgical bleeding. The FDA has approved Pathogen Reduced Cryoprecipitated Fibrinogen Complex (PRCFC) manufactured from amotosalen/UVA-treated plasma that can be kept at room temperature for up to 5 days for the treatment/control of bleeding associated with fibrinogen deficiency.

AIMS

To investigate improvement in turnaround time (TAT) of PRCFC dispensation & decreased wastage compared to CryoAHF.

RESULTS

A total of 2014 cryoprecipitate orders were included in the analysis. Of these, 398 (19.7%) were PRCFC. Reduction in TAT between PRCFC & CryoAHF was most significant for orders placed from the OR and Labor & Delivery (L&D), with a 48.7% reduction in time from order to prepare (p<0.001) and 41.3% reduction in time from order to issue (p<0.001). When adding ICU orders to the analysis, similar reductions in TATs were achieved. When all orders regardless of location were included, time to prepare & issue were reduced by 39.2% & 38.6%, respectively (p<0.001). (*Table 1*).

OR and L&D	PRCFC (n=326)	CryoAHF (n=1029)	% diff	p-value
Order to prepare (min)	13.8 (±11.9)	26.9 (±9.0)	-48.7	<0.001
Order to issue (min)	16.5 (±12.2)	28.1 (±9.5)	-41.3	<0.001
OR, L&D, and ICU	PRCFC (n=343)	CryoAHF (n=1288)	% diff	p-value
Order to prepare (min)	14.2 (±12.5)	26.3 (±9.6)	-46.0	<0.001
Order to issue (min)	17.1 (±12.9)	30.2 (±11.1)	-43.4	<0.001
All Locations	PRCFC (n=398)	CryoAHF (n=1616)	% diff	p-value
Order to prepare (min)	16.0 (±14.0)	26.3 (±10.2)	-39.2	<0.001
Order to issue (min)	19.1 (±14.5)	31.1 (±11.9)	-38.6	<0.001

Tab. 1: Comparison of TATs for PRCFC vs. CryoAHF*

*Values expressed as a % or mean (±std. deviation). Non-normal continuous data analyzed by Mann-Whitney test.

Effect on Wastage

Throughout the first year of implementation, cryoprecipitate wastage was reduced by 27.7% (166 wasted pools in 2021 vs. 120 wasted in 2022). From Jan 2022-present, cryoprecipitate wastage has decreased from 82.5 to 52.7 per 1000 transfused, or from 0.75 to 0.47 per 1000 patient days.

METHODS

- PRCFC was implemented in Jan '22.
- The ordering process was not modified to indicate Cryo AHF or PRCFC.
- 2 units of PRCFC were kept thawed at 20-24°C in a labeled box.
- Turnaround time (TAT) to prepare/allocate & issue cryoprecipitate orders were documented.
- A retrospective analysis of TATs for CryoAHF vs. PRCFC was performed for orders between Jan '22 & Feb '23.
- Outliers, including all orders taking >60 minutes for issue, were excluded from analysis (these reflected non-urgent orders or cryo released as part of massive transfusion protocols that were not released until later shipments).

CONCLUSIONS

PRCFC is ready to dispense & provides an immediate source of fibrinogen in critically bleeding patients with significant reductions in TAT. There is an added benefit of reduced wastage and cost saving.

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