

Category : **Hematology: bleeding\transfusion**

A239 - Weight-adjusted dosing of fibrinogen concentrate and cryoprecipitate in the treatment of hypofibrinogenemic bleeding adult cardiac surgical patients: a post hoc analysis of the fibres randomized controlled trial

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Introduction:

While empiric dosing of fibrinogen replacement is widely utilized and well-tolerated, it may be suboptimal in some cardiac surgery patients, leading to inadequate bleeding control due to acquired hypofibrinogenemia. This may lead to additional transfusion requirements, impacting clinical outcomes. Our aim was to compare the efficacy and safety of weight-adjusted vs. empiric dosing of fibrinogen replacement.

Methods:

This *post-hoc* analysis of the FIBRES randomized controlled trial included adults experiencing clinically significant bleeding and hypofibrinogenemia after cardiac surgery at 11 Canadian centers and utilized empiric dosing of fibrinogen concentrate (FC; *Fibryga*[®], Octapharma; 4 g) or cryoprecipitate (10 IU) [1]. Patients were grouped into quartiles based on increasing weight-adjusted dosing of either product. The primary outcome was the number of red blood cell (RBC) units transfused within 24 h of cardiopulmonary bypass (CPB).

Results:

The median weight-adjusted FC dose was 52 mg/kg (IQR 45–61; n=372) and 1.30 U/10 kg (IQR 1.11–1.54; n=363) for cryoprecipitate. In patients receiving a single dose of either product where plasma fibrinogen level was measured pre and post dosing, the increase in plasma fibrinogen was higher with FC (0.96 g/L, IQR 0.74–1.28; n=252) vs. cryoprecipitate (0.78 g/L, IQR 0.52–1.00; n=225; p<0.0001). There was no difference between patients in the quartile receiving the lowest weight-adjusted doses compared to higher quartiles in the number of RBCs (Table 1) or allogenic transfusions received within 24 h of CPB, return to the operating room, or thromboembolic/ischemic complications within 28 days.

Conclusion:

Transfusion and safety outcomes for low and high weight-adjusted doses of fibrinogen replacement were comparable. Weight-adjusted dosing does not appear to offer advantages over fixed dosing in hypofibrinogenemic bleeding adult cardiac surgical patients.

References:

1. Callum J et al. JAMA 322:1966-76, 2019.

Table:

	Fibrinogen concentrate		Cryoprecipitate	
Quartile	Mean (SD) dosing (mg/kg)	Relative risk (95% CI); p-value	Mean (SD) dosing (IU/10 kg)	Relative risk (95% CI); p-value
1	40 (5)	Reference	1.01 (0.09)	Reference
2	49 (2)	1.04 (0.77, 1.40); p=0.81	1.21 (0.06)	0.82 (0.52, 1.27); p=0.37

3	57 (2)	0.89 (0.70, 1.15); p=0.38	1.39 (0.06)	1.17 (0.85, 1.60); p=0.33
4	71 (10)	0.90 (0.71, 1.13); p=0.36	1.78 (0.22)	1.04 (0.76, 1.43); p=0.80

Table 1. Adjusted hierarchical generalized estimating equation models for number of red blood cells transfused within 24 hours of CPB. Poisson models accounting for clustering by study site, adjusted for surgical complexity, urgency, critical pre-operative status, sex, and age. CI, confidence interval; CPB, cardiopulmonary bypass; IU, international units; SD, standard deviation.