

Transfusionists Talk – Transfusion Made Bloody Easy

FIBRINOGEN CONCENTRATE & PROTHROMBIN COMPLEX CONCENTRATE: TRANSFUSIONISTS CONCENTRATE ON ...
September 27, 2023

PROTHROMBIN COMPLEX CONCENTRATE (PCC) SUMMARY

1. What is PCC?

Brand	Beriplex®	Octaplex®
Composition per mL reconstituted solution	Factor II 20 – 48 IU/mL Factor VII 10 – 25 IU/mL Factor IX 25 IU/mL Factor X 22 – 60 IU/mL Protein C 15 – 45 IU/mL Protein S 12 – 38 IU/mL	Factor II 14 – 38 IU/mL Factor VII 9 – 24 IU/mL Factor IX 25 IU/mL Factor X 18 – 30 IU/mL Protein C 13 – 31 IU/mL Protein S 12 – 32 IU/mL
	<u>Nonmedicinal ingredients:</u> heparin, human antithrombin III, human albumin, sodium chloride, sodium citrate, hydrochloric acid or sodium hydroxide in small amount for pH adjustment, solvent (water for injection)	<u>Nonmedicinal ingredients:</u> heparin, sodium citrate, small amounts of solvent detergent reagents TNBP and Polysorbate, solvent (water for injection)

NOTE:

Prothrombin is FII. Thrombin is the activated form, FIIa.

2. PCC Indications/Transfusion Guidelines

Brand	Beriplex®	Octaplex®
Per product monograph	<ul style="list-style-type: none"> ➤ Urgent treatment or perioperative prophylaxis of major bleeding in acquired deficiency of the prothrombin complex coagulation factors (i.e., deficiency due to vitamin K antagonist treatment, warfarin) ➤ Administer vitamin K simultaneously; monitoring of INR is mandatory. ➤ Use only when rapid correction of levels is necessary. In other situations, reducing the dose of the vitamin K antagonist and/or administration of vitamin K is usually adequate. 	
National Advisory Committee on Blood & Blood Products [NAC]	<ul style="list-style-type: none"> ➤ As per product monographs ➤ “Treatment of bleeding in patients receiving direct FXa inhibitor anticoagulants <ul style="list-style-type: none"> - PCCs should only be considered in patients with severe or life-threatening bleeding ... no randomized trials published.” - “The optimal dosing strategy is uncertain with 2000 IU (fixed dose) or 25-50 IU/kg (to a maximum of 3000 IU) being the most common” ➤ NAC also lists some unique patient scenarios (if plasma is refused) as well as some with limited evidence that are not promoted (coagulation defects/bleeding in cardiac surgery). 	
Bloody Easy 5.1 [BE5.1] (p.127)	<ul style="list-style-type: none"> ➤ As per product monographs ➤ “Reversal of anti-Xa inhibitors: PCCs at a dose of 2,000 IU (repeated in 1 hour if hemostasis is not achieved) is being used across Canada. Data to support its use is limited ...” 	

NOTE:

In clinical practice, currently available 4-factor PCCs are considered interchangeable.

PCC is CONTRAINDICATED in patients with heparin-induced thrombocytopenia [HIT] or with known allergies to heparin (both Beriplex® & Octaplex® contain heparin).

3. PCC Administration

Required: Informed consent; product checks – patient identification, lot number, expiry & visual inspection.

Brand	Beriplex®	Octaplex®
Dose	<ul style="list-style-type: none"> - No clear consensus approach to dosing, observational studies demonstrated various dosing strategies lead to similar outcomes. A single dose should not exceed 3000 IU. - Dosing options include INR based, weight based, and combination INR/weight based. - Per NAC & BE 5.1: For urgent vitamin K antagonist (warfarin) reversal & INR known, INR < 3, PCC 1000 IU; INR 3-5, PCC 2000 IU; INR > 5, PCC 3000 IU. - If major bleeding and INR unknown/taking direct FXa inhibitor anticoagulants: PCC 2000 IU 	
TML Storage	Refrigerator or room temperature. Shelf life 36 months.	Room temperature. Shelf life 36 months.
Reconstitution	<ul style="list-style-type: none"> - Packaged with solvent Water for Injection vial (20/40 mL), Mix2Vial® transfer device (filter). - Bring solvent & product vials to room temp. - Use Aseptic technique. - Gently swirl vial to ensure fully dissolved. Do not shake. - Should be clear or slightly opalescent, do not use if cloudy or has deposits. - Label product appropriately. 	<ul style="list-style-type: none"> - Packaged with solvent Water for Injection vial (20/40 mL), Mix2vial® transfer device (filter). - Use Aseptic technique - Gently swirl vial to ensure fully dissolved Do not shake. - Should be slightly blue to colourless, do not use if cloudy or has deposits. - Label product appropriately.
Expiry post reconstitution	Should be used immediately, may store at room temperature up to 3 hours.	Should be used immediately, may store at room temperature up to 8 hours.

Brand	Beriplex®	Octaplex®
Tubing	Standard IV tubing (filtered as part of reconstitution procedure)	
IV Fluid	Flush IV tubing/infusion site with 0.9% sodium chloride prior to & following administration.	Flush IV tubing/infusion site with 0.9% sodium chloride or 5% dextrose in water prior to & following administration.
Infusion Rate	<ul style="list-style-type: none"> - Not more than 3 IU/kg/minute. - Maximum 8 mL per minute (480 mL/hour). i.e., 1000 IU/40 mL over 5 minutes 	<ul style="list-style-type: none"> - Initial rate 1 mL per minute (60 mL/hour). - Maximum 3 mL per minute (180 mL/hour). - In practice, 1000 IU/40 mL over 5 minutes.
Patient Monitoring	<ul style="list-style-type: none"> - Monitor vital signs before, during and after infusion (observe for tachycardia). - Assess for signs & symptoms of allergic transfusion reaction (hives, rash, facial or airway edema, difficulty breathing, tachycardia, hypotension). - Use of PCC is associated with risk of thrombosis/thromboembolic complications (including myocardial infarction) & especially with repeated dosing. Monitor for signs and symptoms of thromboembolic events (leg or arm swelling, feeling warm to touch, red discoloration, tenderness or cramping; shortness of breath, chest/back pain with breathing). - Use of PCC is associated with risk of disseminated intravascular coagulation [DIC]. 	
Lab test monitoring	<ul style="list-style-type: none"> - Post infusion, repeat INR immediately. Target for vitamin K antagonist reversal: INR ≤ 1.5. - An INR of 1.5 is considered likely equivalent to vitamin-K dependent factor levels of 30-50% (adequate for hemostasis; 100% factor levels are not required for hemostasis). 	

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