# IQALUIT HEALTH SERVICES
## CLINICAL PROCEDURE, POLICY AND PROTOCOL

### Policy and Procedure for the Administration of Human Prothrombin Complex Concentrate (PCC) at Qikiqtani General Hospital

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## 1.0 Application:

1.1 This policy applies to the use of Human Prothrombin Complex Concentrate (PCC) by staff at Qikiqtani General Hospital (QGH).

## 2.0 Policy Statement:

2.1 The Registered Nurse (RN) with the appropriate knowledge, skills and judgment may administer PCC on the written order of a physician.

2.2 PCC may be used for the following indications:

- 2.2.1 Warfarin patients with an elevated INR who require urgent surgical procedure within the next 6 hours or are exhibiting major bleeding.
- 2.2.2 Direct oral anticoagulant (DOAC)/Non-vitamin K antagonist oral anticoagulant (NOAC) patients who require urgent surgical procedure within the next 6 hours or are exhibiting major bleeding, although supportive clinical data are very limited.

2.3 **Note:** Consultation with an internist or hematologist is highly recommended.

2.4 A hospital consent form for "Consent for Blood and/or Blood Product(s)" must be completed by the physician when administration of blood and/or blood products is part of the treatment plan. The physician proposing the treatment is responsible for ensuring that informed consent is obtained prior to infusion.

## 3.0 Principles:

This policy is based on the following principles:

3.1 A physician's written order is required to administer PCC.

3.2 The physician's order must specify the specific product, dose and infusion rate.

3.3 Efforts should be made to reduce the risk of wasting blood products as "onsite" supply is limited and these products are very expensive.

## 4.0 Definitions:

4.1 Human Prothrombin Complex Concentrate (PCC) is human plasma that contains coagulation factors II, VII, IX, X, Protein C and Protein S. Two preparations currently available in Canada are Octaplex® and Beriplex® P/N. Octaplex® will be supplied by the QGH laboratory department.

4.2 Direct Oral Anticoagulant (DOAC)/Non-Vitamin K antagonist Oral Anticoagulant (NOAC) includes three oral direct Factor Xa inhibitors (apixaban, edoxaban and rivaroxaban) and an oral direct Factor IIa (thrombin) inhibitor (dabigatran).

4.3 Urgent Surgery/Procedure is any intervention that has the potential risk of bleeding that is scheduled within the next 6 hours.

## 5.0 Indications:

PCC may be used for the following indications:

5.1 Warfarin patients with an elevated INR who require urgent surgical procedure within the next 6 hours or are exhibiting major bleeding.

5.2 Direct oral anticoagulant (DOAC)/Non-vitamin K antagonist oral anticoagulant (NOAC) patients who require urgent surgical procedure within the next 6 hours or are exhibiting major bleeding, although supportive clinical data are very limited.

## 6.0 Contraindications:

6.1 Patients with a history of heparin induced thrombocytopenia (HIT), as Octaplex® contains heparin.

6.2 Not recommended for:

- 6.2.1 Patients with recent history of disseminated intravascular coagulation (DIC), thrombosis, or myocardial infarction
- 6.2.2 Coagulopathy associated with liver dysfunction/disease
- 6.2.3 Massive transfusions
- 6.2.4 Treatment of elevated INRs without bleeding or need for surgical intervention
- 6.2.5 Elective reversal of warfarin therapy pre-invasive procedure
- 6.2.6 IgA deficient patients with anti-IgA antibodies

## 7.0 Dosing:

7.1 **Warfarin patients** with an elevated INR who require urgent surgical procedure within the next 6 hours or are exhibiting major bleeding:

7.1.1 The following dosing regimen is suggested for Octaplex® (this may differ from recommendations of the manufacturers):

| Initial INR | Less than 3 | 3 – 5 | Greater than 5 |
|---|---|---|---|
| **Dose** | 1000 units (40 mL) | 2000 units (80 mL) | 3000 units (120 mL) |

- 7.1.2 If INR is unknown and major bleeding is present: administer 2000 units (80 mL)
- 7.1.3 PCC should be given within 30 minutes of surgery.
- 7.1.4 **Vitamin K (kept as unit stock):** Vitamin $K_1$ (10 mg IV) co-administration is strongly recommended if reversal is required for longer than 6 hours (the half-life of PCC).
  - Vitamin $K_1$ is usually given over 30 minutes but may be infused at a maximum rate of 1 mg/min.
  - Onset of action of IV Vitamin $K_1$ is 4-6 hours.

7.2 **DOAC/NOAC (apixaban, dabigatran*, edoxaban, rivaroxaban) patients** who require urgent surgical procedure within the next 6 hours or are exhibiting major bleeding:

- 7.2.1 Recommended dose for Octaplex®: 50 units/kg, max 3000 units

*Only if idarucizumab (Praxbind®) not available.

## 8.0 Patient Monitoring:

8.1 **INR (only for warfarin patients):** check prior to administration of PCC along with other ordered blood work. Repeat 10-30 minutes post-administration.

- 8.1.1 If correction to an INR < 1.5 has not been achieved and there is insufficient time to wait for Vitamin K to take effect, a second dose of PCC may be considered if major bleeding continues or surgical procedure required.

8.2 **Vital signs:** pre-administration, and then during infusion at 5, 15 minutes and upon completion of dose.

## 9.0 Procedure:

9.1 Octaplex® supplied as Octaplex® 1000 in 40 mL vials (Note: 1000 refers to 1000 units of Factor IX/vial).

9.2 **Ordering PCC**

- 9.2.1 The Physician shall ensure the following is legibly documented when prescribing PCC:
  - 9.2.1.1 Written consent for infusion.
  - 9.2.1.2 Patient's refusal to infusion (if applicable).
  - 9.2.1.3 Patient's first and last name and identification number on the order request.
  - 9.2.1.4 Clinical indication for PCC.
  - 9.2.1.5 Specific product to be used (Octaplex®)
  - 9.2.1.6 Dose of PCC required.
  - 9.2.1.7 Date and time of infusion, infusion rate or duration of the infusion.
  - 9.2.1.8 Pre/Post PCC medication orders related to infusion, if applicable.
  - 9.2.1.9 The order must be placed in Meditech for the lab to issue the product; orderable per vial of 1000 units.
- 9.2.2 The Registered Nurse administering PCC shall ensure the following:
  - 9.2.2.1 Confirmation that the physician's order accurately identifies the patient name, identification number, and all other items listed in 9.2.1.
  - 9.2.2.2 Confirmation that the patient consent to infusion has been signed.
  - 9.2.2.3 Completion of the requisition for request to provide PCC.
  - 9.2.2.4 Immediately before infusion, two Registered Nurses must confirm and document that all identifying information linking the recipient and the PCC matches.
  - 9.2.2.5 Do not initiate the infusion if any discrepancy is found in the identifying information until the discrepancy is resolved. Complete an incident report to document any near miss incident.
  - 9.2.2.6 Store the vial for 48 hours after infusion in case of an adverse reaction.

9.3 **Administration of PCC**

- 9.3.1 **Access:**
  - 9.3.1.1 PCC can be given via intravenous (IV) infusion (peripherally or centrally), or by intraosseous (IO) injection if deemed necessary.

- 9.3.2 **Reconstitution Supplies:**
  - 9.3.2.1 Vial of PCC (Octaplex®) powder
  - 9.3.2.2 Vial of Sterile Water for Injection (diluent) (supplied in Octaplex® kit)
  - 9.3.2.3 Mix2Vial™ filter transfer device (supplied in Octaplex® kit)

9.3.2.4 Sterile Luer lock syringe (large enough to fit prescribed dose)

9.3.3 **Reconstitution:**

9.3.3.1 Warm the unopened diluent and the product to room temperature (not to exceed 37ºC).

9.3.3.2 Use only the supplies and diluent contained in the box for reconstitution.

9.3.3.3 Follow the reconstitution instructions for Octaplex® as detailed in appendix 1.

9.3.4 **Administration Supplies:**

9.3.4.1 For IV infusion:

- IV administration set
- IV pump

9.3.5 **Administration Notes:**

9.3.5.1 DO NOT further dilute in any IV solutions.

9.3.5.2 PCC cannot be infused concurrently with any other IV infusions.

9.3.5.3 Always use IV tubing that has not been previously used for medications.

9.3.5.4 Inspect visually for particulate matter prior to administration; PCC should be particulate free.

9.3.5.5 Octaplex® solution should be colourless to slightly blue.

9.3.5.6 PCC should be administered immediately after reconstitution (within 2 hours).

9.3.5.7 DO NOT refrigerate after reconstitution.

9.3.5.8 Infusion rates:
**Octaplex®:** initial infusion rate of 1 mL/min; after 10 minutes, if patient is tolerating well the infusion, may increase rate up to maximum of 6 mL/min.

9.3.5.9 **Vitamin K:** if ordered, administer as soon as possible. The usual recommended dose of Vitamin K is 10 mg IV over 30 minutes, but may be infused at a maximum rate of, but not exceeding 1 mg/min.

9.3.5.10 Perform INR 10-30 minutes post administration of PCC (if patient was on warfarin).

9.3.6 **IV Infusion:**

**Buretrol: (in-line or 'add-a-line')**

9.3.6.1 **Option 1:** Attach a 500 mL normal saline bag to buretrol line. Prime tubing with 35 mL normal saline (leave chamber empty) and close clamp between NS and buretrol. Add PCC to chamber for infusion and infuse product. At the end of the PCC infusion, flush line at the same infusion rate with 35 mL normal saline to ensure entire dose has been administered.

9.3.6.2 **Option 2:** Prime buretrol line with PCC. Infuse PCC. At the end of the infusion, flush line at the same rate with 35 mL normal saline to ensure entire dose has been administered.

## 10.0 Potential Hazards with IV Administration:

10.1 Potential adverse events related to a blood product transfusion (including Octaplex®) range in severity from minor with no sequelae to life-threatening.

10.2 **Allergic or anaphylactic-type reactions may rarely occur.** These may include angioedema, injection site reactions, chills, flushing, urticaria, headache, drop in blood pressure, anxiety, nausea, vomiting, sweating, tachycardia, dyspnea, or bronchospasm. In rare cases, these reactions may progress to severe anaphylaxis.

10.3 All adverse events during an infusion of Octaplex® should be evaluated to determine whether or not the infusion can be safely continued/restarted.

| | | |
|---|---|---|
| **Side Effects**<br>- Flushing<br>- Headache<br>- Nausea<br>- Itching and redness at the venipuncture site | → | **Action**<br>Slow rate of infusion |
| **Potential Allergic Reaction**<br>- Stuffy nose<br>- Hives/severe itching<br>- Cough<br>- Chest pain<br>- Wheezing<br>- Facial swelling<br>- Fainting | → | **Action**<br>**STOP infusion IMMEDIATELY**<br>and contact physician |

10.4 All adverse events suspected to be related to Octaplex® (whether during or after infusion) must be reported.

10.5 Octaplex® has been rarely associated with immediate allergic or thrombotic complications. Inform patients/families regarding the small thrombotic risk (e.g., stroke, MI, DVT, PE), but consequences of uncontrolled bleeding likely exceed this risk.

## 11.0 Documentation:

11.1 The recipient's medical chart/record shall contain a record/note that includes the following information:

- 11.1.1 PCC unit identification number
- 11.1.2 Date and time infusion starts and ends
- 11.1.3 Identity of nurse administering
- 11.1.4 Any transfusion reactions
- 11.1.5 Above should be documented electronically in Meditech

11.2 For each PCC unit issued, a record system shall be in place which documents:

- 11.2.1 Recipient's name and identification number
- 11.2.2 Name and manufacturer of product
- 11.2.3 Lot number
- 11.2.4 Volume and/or potency
- 11.2.5 Dosage/number of vials issued
- 11.2.6 Visual inspection
- 11.2.7 Date and time of issue
- 11.2.8 Identity of the person issuing the PCC
- 11.2.9 Identity of the person transporting PCC to the recipient's location
- 11.2.10 The blood bank tag should be returned to the lab with transfusion details filled on it (date, time, RN, reaction)

11.3 A copy of the infusion information related to the patient shall become part of the recipient's permanent medical chart/record.

11.4 The record keeping system shall be able to trace the PCC product.

## 12.0 References:


1) Alberta Health Services. Beriplex P/N Prothrombin Complex Concentrate; Feb 2017. Available at: http://www.albertahealthservices.ca/assets/wf/lab/wf-lab-clin-tm-beriplex.pdf. Accessed July 13, 2020.

2) Alberta Health Services. Octaplex Prothrombin Complex Concentrate; May 2018. Available at: http://www.albertahealthservices.ca/assets/wf/lab/wf-lab-clin-tm-octaplex.pdf. Accessed July 13, 2020.

3) Alberta Health Services. Prothrombin Complex Concentrate Clinical Information; Sept 2019. Available at: http://www.albertahealthservices.ca/assets/wf/lab/wf-lab-clin-tm-pcc-clinreconst-info.pdf. Accessed July 13, 2020.

4) Giudice M, Gregoire N, Massicotte A. TOH Parenteral Drug Therapy Manual, 40th edition: 2019.

5) Beriplex® P/N product monograph. Ottawa (ON): CSL Behring Canada Inc; 2019 October 23.

6) National Advisory Committee on Blood and Blood products. Recommendations for use of prothrombin complex concentrates in Canada. Final report, May 16, 2014. Available at: http://www.nacblood.ca/resources/guidelines/PCC-Recommendations-Final-2014-05-16.pdf. Accessed July 13, 2020.

7) Nova Scotia Provincial Blood Coordinating Program. Beriplex® P/N Human Prothrombin Complex Concentrate (PCC); 2018. Available at: file:///C:/Users/chris/Downloads/product-administration-guidelines-beriplex.pdf. Accessed July 13, 2020.

8) Nova Scotia Provincial Blood Coordinating Program. Octaplex® Human Prothrombin Complex Concentrate (PCC); 2018. Available at: file:///C:/Users/chris/Downloads/product-administration-guidelines-octaplex%20(4).pdf. Accessed July 13, 2020.

9) Octaplex® product monograph. Toronto (ON): Octapharma Canada Inc; 2017 November 3.

10) Riess HB, Meir-Hellmann A, Motsch J, et al. Prothrombin complex concentrate (Octaplex) in patients requiring immediate reversal of oral anticoagulation. Thromb Res 2007;121: 9-16.

11) Thrombosis Canada. NOACS/DOACS: Management of Bleeding; 2019 March 29. Available at: https://thrombosiscanada.ca/wp-content/uploads/2019/04/NOACs-DOACs-Management-Bleeding-29Mar19.pdf. Accessed July 13, 2020.