ALBERTA PRECISION LABORATORIES
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Alprolix®

Factor IX Concentrate (Recombinant), Extended Half-Life

APPLICABILITY: This document applies to APL, AHS, Covenant Health, and all other health care professionals involved in the transfusion of blood components and products in Alberta.	***OTHER NAMES:*** *Factor IX Concentrate, FIX, Fc Fusion Protein* ***Company:*** *Sanofi* ***Class:*** *Manufactured recombinant factor, extended half-life*

	INTRAVENOUS			OTHER		
ROUTES	**DIRECT IV**	**Intermittent Infusion**	**Continuous Infusion**	**SC**	**IM**	**OTHER**
Acceptable Routes*	Yes**	Yes	No	No	No	N/A

* Administration of blood components and blood products is a restricted activity. For specific conditions that apply to a profession's authorization to administer blood components and blood products, consult the applicable discipline-specific regulation under the Health Professions Act (Alberta). Health care professionals with this authorization require the applicable education, training and competency.
** Direct IV administration of blood products may be performed by health care professionals that have authorization of administration of blood products within their scope of practice.

DESCRIPTION:

- Alprolix® is a sterile, non-pyrogenic, lyophilized recombinant DNA derived coagulation factor IX concentrate.
- Product is a white to off-white lyophilized powder.
- Reconstituted solution is colourless and clear, to slightly opalescent.
- Available in 250, 500, 1000, 2000, 3000, and 4000 IU single use vials.
- Each vial contains the labeled amount of factor IX potency expressed in IU per vial.
- Vials are reconstituted with 5 mL 0.325% sodium chloride in a prefilled syringe.
- Also contains sucrose, sodium chloride, L-histidine, mannitol and polysorbate 20.
- Preservative-free.
- Latex-free.

AVAILABILITY:

- Supplied by Canadian Blood Services.
- Contact your local transfusion service/laboratory regarding stock availability on site.

INDICATIONS:

- Indicated in adults and children with hemophilia B (congenital factor IX deficiency or Christmas disease) for Alprolix® to increase plasma levels of factor IX activity, enabling a temporary correction of factor deficiency and bleeding tendency.
  - Routine prophylactic treatment to reduce the frequency of bleeding episodes
  - Perioperative management of bleeding (surgical prophylaxis)
  - On-demand treatment and control and prevention of bleeding episodes.

CONTRAINDICATIONS:

- Patients with known hypersensitive to the product or any ingredient in the formulation or component of the container.

WARNINGS:

- The formation of neutralizing antibodies (inhibitors) have been reported with Alprolix®. All patients should be carefully monitored for the development of inhibitors by appropriate clinical observations and laboratory tests.
- The use of Factor IX containing products has been associated with the development of thromboembolic complications. Monitor patients for early signs of vascular thrombotic events.
- Nephrotic syndrome has been reported following immune tolerance induction with Factor IX containing products in hemophilia B patients with Factor IX inhibitors and a history of allergic reaction to Factor IX.

DOSE (Refer to Product Insert):

- Dose to be determined by the most responsible health practitioner (MHRP) only after consult with Hematologist or bleeding disorders clinic.
- Refer to patient's care plan or Factor First card, if available.
- Dosage and duration of treatment depend on the severity of the Factor IX deficiency, location and extent of bleeding, the patient's pharmacokinetic profile, and the patient's clinical condition.
- Clinical response to Alprolix® may vary. If bleeding is not controlled with recommended dose, a plasma level of factor IX should be determined, and sufficient dose administered to achieve clinical response.
- 1 IU of Alprolix® per kg of body weight is expected to increase the circulating level of factor IX by approximately 1% in patients over 12 years of age.

Manufacturer Recommended Dosing:

Indication	Situation	Target (% of normal FIX)	Recommended Dosing Interval More frequent or higher doses may be needed in patients under 12 years of age.
Prophylaxis	Adults and adolescents (12 years and over)	N/A	50 IU/kg once weekly or 100 IU/kg every 10 days
On-demand	Minor and Moderate Bleeding:	30-60	30-60 IU/kg Repeat every 48 hours if there is further evidence of bleeding.
	Major Bleeding	80-100	80-100 IU/kg **Day 1 to 3 (first 72 hours):** Consider a repeat dose after 6-10 hours and then every 24 hours. **After day 3:** Every 48 hours until bleeding resolves.
Perioperative management	Minor Surgery:	50-80	50 – 80 IU/kg Single infusion may be sufficient Repeat as needed after 24-48 hours until bleeding resolves.
	Major Surgery:	60-120 (initial level) Day to 3: 40-60 Days 4 – 6: 30-50 Days 7-14: 20-40	100 IU/kg initial dose **Day 1 to 3 (first 72 hours):** Consider a repeat dose of 80IU/kg after 6-10 hours and then every 24 hours. **After day 3:** Every 48 hours until bleeding resolves.
*Dosage Required (IU) = Body Weight (kg) × Desired Factor IX Increase (IU/dL or % normal) × 0.5 (IU/kg per IU/dL)			

ADMINISTRATION:

Confirm written (signed) consent has been obtained and documented prior to requesting blood components or blood products from the transfusion service/laboratory where possible.

Pre-Infusion:

- Ensure recent patient weight and height is on file.
- Ensure pertinent labs are available as required (ie. Factor IX).
- Ensure any ordered premedications have been given (antihistamines, antipyretics prn).
- Perform pre-transfusion checks per AHS Transfusion of Blood Component and Blood Products Policy.
- Report any new onset acute illness to the authorized prescriber prior to commencing infusion.

Access: Alprolix® can be given via peripheral or central venous access site.

Reconstitution Supplies:

- Alprolix® Product (lyophilized powder)
- 0.325% sodium chloride solution (Prefilled syringe provided with product)
- Vial adapter (included with product)
- Plunger rod (included with product)
- Antiseptic swabs (not included with product)

Compatible IV Solutions:

- Do not mix with other products, medications, or solutions.
- Normal saline may be used to flush the line.

Reconstitution:

- Bring the product and diluent to room temperature before reconstitution.
- See Prefilled Syringe Reconstitution Instructions.
- Do not refrigerate after reconstitution.

ADMINISTRATION cont'd

Administration Supplies:

- Antiseptic swabs
- Infusion set (included with product)
- Sterile plastic luer lock syringe, large enough to contain dose*

* **Note:** The pre-filled glass syringe with diluent used to reconstitute and administer product may not be compatible with all needleless connectors for intravenous catheters (e.g. ICU Medical MicroClave® Neutral Connector). You may need to withdraw reconstituted product into a sterile plastic syringe with a standard luer-lock connector. Ensure the vial adapter is used when withdrawing the solution from the vial into the syringe.

Administration

- Alprolix® should be administered immediately and no later than 3 hours after reconstitution.
- If product cannot be administered immediately, refer to storage and stability section below.
- Visually inspect the product for particulate matter and discolouration prior to administration. Do not use solutions that are visibly cloudy or have deposits.
- **Administration rate:**
  - Administration rate should be specified by the MRHP after patient assessment.
  - Maximum infusion rate 10 mL/minute.

POTENTIAL HAZARDS WITH PARENTERAL ADMINISTRATION:

- Potential adverse events related to a blood product transfusion range in severity from minor with no sequelae to life-threatening.
- All adverse events occurring during a transfusion should be evaluated to determine whether or not the transfusion can be safely continued/restarted.
- All adverse events suspected to be related to a product transfusion (whether during or after a transfusion) must be reported to your local transfusion service.
- The most common reactions to Alprolix® are injection site reaction, hypersensitivity, factor IX inhibition, headache, oral paresthesia, and obstructive uropathy.
- Monitor for signs and symptoms of thrombosis.

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

NURSING IMPLICATIONS:

Patient Monitoring:

- Vital Signs: Pre-administration**,** on completion of dose, and as patient condition requires.
- If the patient has experienced a previous adverse reaction to product transfusion, or this is the first transfusion of the product for the patient, monitor for 30 – 60 minutes post.

Patients receiving blood product transfusions must be observed closely for signs of any unexpected or untoward reactions. These reactions may occur during or after the infusion of blood or blood products. For follow up instructions to a transfusion reaction, go to http://www.albertahealthservices.ca/lab/page4240.aspx

Documentation:

- Ensure documentation is completed as per the *AHS Transfusion of Blood Components and Blood Products Policy*
- Start and stop time of infusion and assessment of patient tolerability should be documented in appropriate flow chart or clinical record (electronic or paper).
- Document vital signs as required in the appropriate flow chart or clinical record (electronic or paper).
- Provide patient notification of transfusion documentation where required.

LABORATORY MONITORING

- Regular determinations of the patient's factor IX plasma level are necessary for monitoring the course of therapy and calculation of appropriate maintenance doses.
- Patient should be monitored for the development of factor IX inhibitors. If the expected factor IX activity plasma levels are not attained, or if bleeding is not controlled with an appropriate dose, an assay should be performed to determine if a factor IX inhibitor is present.

STORAGE & STABILITY:

- Store at 2 to 8°C until expiry.
- The lyophilized product may be stored at room temperature (15 - 30°C), for a single 6-month period within the expiration date printed on the label. Once stored above refrigerated temperature, do not return the product to refrigerated storage.
- Store reconstituted product at room temperature (15 - 30°C), for no longer than 3 hours.
- Protect from light.

CONTACT INFORMATION:

Approved By: APL Transfusion Medicine Discipline Council
For questions or comments please contact: Transfusion.SafetyTeam@aplabs.ca

REFERENCES

Sanofi-aventic Canada Inc. November 2021. Alprolix Product Monograph. Submission Control No 246919. [Accessed 24June22]. https://products.sanofi.ca/en/alprolix.pdf

PS-59 AHS Transfusion of Blood Components and Blood Products Policy.