ALBERTA PRECISION LABORATORIES
Leaders in Laboratory Medicine

Antithrombin III NF (human)

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:*** *ATIII* ***Company:*** *Takeda* ***Class:*** *Manufactured blood product, derived from human plasma*

	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:

- Antithrombin III NF® (ATIII) is a sterile, purified, lyophilized concentrate of antithrombin III prepared from large pools of human plasma.
- Pathogen inactivation/removal steps include, adsorption, heat treatment, precipitation, and nanofiltration.
- Each vial contains the labeled amount of antithrombin III in international units (IU) per vial.
- Available in approximately 1000 IU (900 – 1100 IU) single-use vials sizes.
- Vials are reconstituted with 20 mL sterile water for injection.
- pH is 6.0 – 7.5
- Also contains protein, glucose, sodium chloride, sodium citrate, $2H_2O$, and Tris (hydroxymethyl) aminomethane.
- Preservative-free
- Latex-free

AVAILABILITY:

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

INDICATIONS:

- Prophylaxis and treatment of thrombotic and thromboembolic disorders in patients with hereditary ATIII deficiency (ATIII activity below 70% of normal).

CONTRAINDICATIONS:

- Patients who are hypersensitive to ATIII, or any ingredient in the formulation or component of the container.
- Patients with a known history of heparin-induced thrombocytopenia.

WARNINGS:

- The anticoagulant effect of heparin is enhanced by concurrent treatment with ATIII.
- In patients with hemorrhagic diathesis, the combined use of ATIII and heparin will increase the risk of bleeding.

DOSE:

- Dose to be determined by the most responsible health practitioner (MHRP) **only** after consult with Hematologist or bleeding disorders clinic.
- Dosage and duration of treatment depend on the cause and severity of the deficiency, and the patient's clinical condition.
- ATIII activity must be determined for accurate dosage calculation. The normal range of ATIII activity in human plasma is between 80%-120%. A decrease in activity to below 70% of normal is associated with an increased risk of thrombosis. Refer to the product insert for dose calculations based on ATIII activity.
- **On-demand treatment:**
  - Refer to patient's care plan or Factor First card, if available
  - If neither are available, consult with bleeding disorders clinic or transfusion medicine physician.

ADMINISTRATION:

Confirm written (signed) consent has been obtained and documented prior to requesting blood component from lab/transfusion service where possible.

Pre-Infusion:

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

Access: ATIII NF® can be given via central or peripheral venous access device.

Reconstitution Supplies:

- ATIII NF® Product (lyophilized powder)
- 20mL Sterile Water for Injection (included with product)
- Double-ended transfer needle (included with product)
- Filter needle (included with product)
- Antiseptic swabs (not included with product)

Administration Supplies:

- Sterile plastic Luer lock syringe (large enough to contain dose)
- Filter needle (included with product)
- IV administration set (with 5-149 micron filter, if not being drawn up using enclosed filter needle)
- IV pump (if required)

Compatible IV Solutions:

- Do not mix with other products, medications, or solutions.

Reconstitution:

- Bring ATIII® to room temperature before reconstitution
- See Double-Ended Transfer Needle Reconstitution Instructions.
- Do not refrigerate after reconstitution.

Administration:

- Visually inspect the reconstituted product. Do not use solutions that are cloudy or have deposits.
- Give within 30-60 minutes of reconstitution.
- Draw the reconstituted product into a sterile syringe using the enclosed filter needle, then change to a suitable IV needle or infusion set.
- If the filter needle is not used to draw up the product, then an intravenous infusion set with a 5-149 micrometer filter is required.
- **Administration rate:**
  - Administration rate should be specified by the MRHP after patient assessment.
  - Maximum rate is 5 mL/min.

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 ATIII® are tremor, hot flush, hypersensitivity/anaphylactic reactions, and heparin-induced thrombocytopenia.

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

- When ATIII is used together with heparin, regular monitoring of APTT (activated partial thromboplastin time) and corresponding adjustment of the heparin dose is recommended.
- ATIII plasma levels should be monitored daily during the treatment period in order to adjust the individual dose, due to the consumption of antithrombin by prolonged treatment with non-fractionated heparin.
- The measurement of antithrombin III biological activity is recommended for the determination of the patient's plasma level of antithrombin III before and during treatment.

STORAGE & STABILITY

- Store at 2-8°C until expiry.
- Do not refrigerate reconstituted solution.

CONTACT INFORMATION:

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

REFERENCES

Takeda Canada Inc. 30Apr2021. Antithrombin III NF product monograph. Submission Control No 246332. [Accessed 24May22] https://www.takeda.com/49a55e/siteassets/en-ca/home/what-we-do/our-medicines/product-monographs/antithrombin-iii/antithrombin-iii-nf-pm-en.pdf