



Bonus Monographs



Antithrombin III (Human)

(an-tee-**THROM**-bin)

PREGNANCY CATEGORY: B

CLASSIFICATION(S):

Anticoagulant, antithrombin

Rx: Thrombate III

ACTION/KINETICS

Antithrombin III (AT-III) is the major plasma inhibitor of thrombin. For therapeutic use it is obtained from plasma of human volunteers. Inactivation of thrombin by AT-III results from formation of a covalent bond causing an inactive 1:1 stoichiometric complex between thrombin and AT-III. AT-III also inactivates other components of the coagulation cascade including factors IXa, Xa, XIa, and XIIIa, and plasmin. **t_{1/2}:** 2.5 days (based on immunologic assays).

USES

Hereditary AT-III deficiency in pregnant clients, in clients requiring surgery, and in individuals with thromboembolism.

SPECIAL CONCERNS

Safety and effectiveness have not been determined in children. Even though special precautions are taken to screen plasma donors, clients may develop S&S of viral infections, especially hepatitis C.

SIDE EFFECTS

GI: Nausea, foul taste in mouth, bowel fullness. **CNS:** Dizziness, lightheadedness. **Respiratory:** Chest tightness,

shortness of breath, chest pain. **Miscellaneous:** Chills, cramps, film over eye, hives, fever, oozing, hematoma.

DRUG INTERACTIONS

↑ Heparin effect when used concomitantly with AT-III; ↓ heparin dose during AT-III therapy.

HOW SUPPLIED

Powder for injection, lyophilized: 500 IU, 1000 IU

DOSAGE

• **IV ONLY**

Individualize dose depending on the pretherapy plasma AT-III level. The dosage can be calculated from the following formula:

units required (IU) = [desired AT-III level (%) - baseline AT-III level (%)]/1.4 × body weight (kg)

The formula is based on an expected incremental recovery above baseline levels for AT-III of 1.4%/IU/kg given. Each bottle of AT-III has the functional activity, in international units (IU), stated on the label.

The following regimen may be used as a starting point for treatment; modification is based on actual plasma AT-III levels reached.

1. Calculate the initial loading dose to elevate plasma AT-III levels to 120%, assuming a rise over baseline plasma AT-III of 1.4% (functional activity)/IU/kg given.

2. Measure plasma AT-III levels preinfusion, 20 minutes postinfusion (peak), after 12 hr, and preceding the next infusion (trough level). Subsequently, measure AT-III levels preceding and 20 min after each infusion until predictable peak and trough levels have

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been reached (usually between 80% and 120%). Plasma levels between 80% and 120% may be maintained by giving maintenance doses of 60% of the initial loading dose q 24 hr. Adjust the maintenance dose or interval between doses based on actual plasma AT-III levels reached.

If AT-III therapy is indicated for a client with hereditary deficiency to control an acute thrombotic episode or to prevent thrombosis following surgical or obstetrical procedures, increase the AT-III plasma level to normal and maintain for 2–8 days. This will depend on the reason for treatment, type and extensiveness of surgery, medical condition and history of the client, and judgment of the physician.

NURSING CONSIDERATIONS

ADMINISTRATION/STORAGE

- IV** 1. Reconstitute with sterile water for injection. Filter through a sterile needle as supplied in the package. Do not shake product.
2. After reconstitution, bring to room temperature and administer within 3 hr.
3. Infuse over 10–20 min.
4. Once reconstituted, give the drug alone without mixing with other agents or diluting solutions.

ASSESSMENT

1. Perform a complete nursing history noting any positive family history of venous thrombosis.
2. Determine that AT-III levels have been obtained prior to drug therapy and as directed under dosage.
3. Document pretreatment weight.

INTERVENTIONS

1. Observe for dyspnea and elevated

BP during IV administration; slow infusion rate and report if evident.

2. Monitor VS closely (q 5–15 min) during infusion.
3. Note early S&S of acute thrombosis. Perform routine neuro and vascular checks and monitor AT-III levels bid until stabilized and then daily before dosing.
4. Observe for any evidence of bleeding. Report back pain, leg weakness, decreased pulses or bleeding. Anticipate a reduced dose of heparin when administered concomitantly with AT-III.
5. When AT-III is given for clients with hereditary deficiency to control an acute thrombosis or to prevent thrombosis due to surgery or in obstetrics, levels should be maintained for 2–8 days, depending on client status.
6. For use only in facilities with personnel trained in drug use and selected patient management.

CLIENT/FAMILY TEACHING

1. Review the high risk of thrombosis during pregnancy and surgery in clients with hereditary deficiencies because AT-III levels are generally 50% of the level of normal.
2. The disease is inherited; obtain appropriate medical follow-up, counseling, and family planning.
3. Understand associated risks of drug therapy; product is derived from pooled human plasma.

OUTCOMES/EVALUATE

- Serum AT-III levels > 80% of normal during therapy for high-risk procedures
- Prevention of thrombus formation