

TINZAPARIN

Class: Low Molecular Weight Heparin

Indications: Treatment of deep vein thrombosis (DVT) and/or pulmonary embolism (PE) (except in patients with severe hemodynamic instability); prevention of venous thromboembolism (VTE) following orthopedic surgery or following general surgery in patients at high risk of VTE; prevention of clotting in indwelling intravenous lines and extracorporeal circuit during hemodialysis (in patients without high bleeding risk)

Available dosage form in the hospital: 14000IU / .7ML, 18000 IU/0.9ML SYRINGE, 3500 IU/.35ML, 10000 IU/ML VIAL, 20000 IU/ML VIAL, 20000 IU/ML, 0.5ML SYRINGE, 4500 IU/ML SYRINGE.

Dosage: Note: 1 mg of tinzaparin equals 70-120 units of anti-Xa activity

-DVT and/or PE treatment: SubQ: 175 anti-Xa units/kg once daily (maximum: 18,000 anti-Xa units/day). The 2012 *Chest* guidelines recommend starting warfarin on the first or second treatment day and continuing tinzaparin until INR is ≥ 2 for at least 24 hours (usually 5-7 days) . Body weight dosing using prefilled syringes may also be considered.

-DVT prophylaxis: SubQ:

-Hip replacement surgery: Note: The American College of Chest Physicians recommends initiation of LMWH ≥ 12 hours preoperatively or ≥ 12 hours postoperatively; extended duration up to 35 days suggested.

-Preoperative regimen: 50 anti-Xa units/kg given 2 hours preoperatively followed by 50 anti-Xa units/kg once daily for 7-10 days

-Postoperative regimen: 75 anti-Xa units/kg once daily, with initial dose given postoperatively and continued for 7-10 days

-Knee replacement surgery: 75 anti-Xa units/kg once daily, with initial dose given postoperatively and continued for 7-10 days. Note: The American College of Chest Physicians recommends initiation of LMWH ≥ 12 hours preoperatively or ≥ 12 hours postoperatively; extended duration of up to 35 days suggested. Body weight dosing using prefilled syringes may also be considered. Refer to manufacturer labeling for detailed dosing recommendations.

-General surgery: 3500 anti-Xa units once daily, with initial dose given 2 hours prior to surgery and then continued postoperatively for 7-10 days

-Anticoagulant in extracorporeal circuit during hemodialysis (recommendations apply to stable patients with chronic renal failure): I.V.:

-Dialysis session ≤ 4 hours (no hemorrhage risk): Initial bolus (via arterial side of circuit or I.V.): 4500 anti-Xa units at beginning of dialysis; typically achieves plasma concentrations of 0.5-1 anti-

Xa units/mL; may give larger bolus for dialysis sessions >4 hours. For subsequent dialysis sessions, may adjust dose as necessary in increments of 500 anti-Xa units based on previous outcome.

-Dialysis session ≤4 hours (hemorrhage risk): Initial bolus (I.V. only): 2250 anti-Xa units at beginning of dialysis (do not add to dialysis circuit). A smaller second I.V. dose may be administered during dialysis sessions >4 hours. For subsequent dialysis sessions, adjust dose as necessary to achieve plasma concentrations of 0.2-0.4 anti-Xa units/mL.

Geriatric

Refer to adult dosing. Increased sensitivity to tinzaparin in elderly patients may be possible due to a decline in renal function. Use is not recommended in patients >70 years of age with renal impairment.

Renal Impairment:

- Cl_{cr} ≥30 mL/minute: No dosage adjustment provided in manufacturer's labeling; however, primarily undergoes renal elimination. Clearance is decreased in renal impairment; use with caution.
- Cl_{cr} <30 mL/minute : Manufacturer's labeling suggests that a reduction in dose be considered but does not provide specific dose recommendations. Use with caution.

Hepatic Impairment:

No dosage adjustment provided in manufacturer's labeling. Does not undergo hepatic metabolism; however, has been associated with transient increases in transaminase levels; use with caution.

Common side effect: >10%: Hepatic: ALT increased (≤13%). Local: Injection site hematoma. 1% to 10%: Cardiovascular: Chest pain (2%), angina pectoris (≥1%), arrhythmia (≥1%), coronary thrombosis/MI (≥1%), dependent edema (≥1%), thromboembolism (≥1%). Central nervous system: Fever , headache ,pain .

Pregnancy Implications: Teratogenic events were not observed in animal reproduction studies.

Tinzaparin does not cross the human placenta. A pharmacokinetic study in pregnant women found no dose adjustment was needed during pregnancy. Vaginal bleeding was reported in ~10% of pregnant patients during tinzaparin therapy. LMWH is recommended over unfractionated heparin for the treatment of acute venous thromboembolism (VTE) in pregnant women. LMWH is also recommended over unfractionated heparin for VTE prophylaxis in pregnant women with certain risk factors. LMWH should be discontinued prior to induction of labor or a planned cesarean delivery. When choosing therapy, fetal outcomes (ie, pregnancy loss, malformations), maternal outcomes (ie, VTE, hemorrhage), burden of therapy, and maternal preference should be considered . Contains benzyl alcohol; use with caution in pregnant women due to association with gasping syndrome in premature infants.