

PROTAMINE SULPHATE

Class: Antidote

Indications: Treatment of heparin overdosage; neutralize heparin during surgery or dialysis procedures

Unlabeled ; Treatment of low molecular weight heparin (LMWH) overdose

Available dosage form in the hospital: 10MG/ML AMP.

Dosage:

- **Heparin neutralization:** I.V.: Protamine dosage is determined by the dosage of heparin; 1 mg of protamine neutralizes ~100 units of heparin; maximum dose: 50 mg

Note: When heparin is given as a continuous I.V. infusion, only heparin given in the preceding several hours should be considered when administering protamine. For example, a patient receiving heparin at 1250 units/hour will require ~30 mg of protamine for reversal of heparin given in the last 2-2.5 hours .

-**Heparin overdosage, following intravenous administration:** I.V.: Since blood heparin concentrations decrease rapidly **after** administration, adjust the protamine dosage depending upon the duration of time since heparin administration as follows: See table.

Time Elapsed	Dose of Protamine (mg) to Neutralize 100 units of Heparin
Immediate	1-1.5
30-60 min	0.5-0.75
>2 h	0.25-0.375

-**Heparin overdosage, following SubQ injection:** I.V.: 1-1.5 mg protamine per 100 units heparin; this may be done by a portion of the dose (eg, 25-50 mg) given slowly I.V. followed by the remaining portion as a continuous infusion over 8-16 hours (the expected absorption time of the SubQ heparin dose)

-**LMWH overdose (unlabeled use):** I.V.: **Note:** Anti-Xa activity is never completely neutralized (maximum: ~60% to 75%). Excessive protamine doses may worsen bleeding potential.

Enoxaparin:

- *Enoxaparin administered in ≤ 8 hours:* Dose of protamine should equal the dose of enoxaparin administered. Therefore, 1 mg of protamine sulfate neutralizes 1 mg of enoxaparin.
- *Enoxaparin administered in > 8 hours or if it has been determined that a second dose of protamine is required (eg, if aPTT measured 2-4 hours after the first dose remains prolonged or if bleeding continues):* 0.5 mg of protamine sulfate for every 1 mg of enoxaparin administered

Dalteparin or tinzaparin : 1 mg protamine for each 100 anti-Xa units of dalteparin or tinzaparin; if PTT prolonged 2-4 hours after first dose (or if bleeding continues), consider additional dose of 0.5 mg for each 100 anti-Xa units of dalteparin or tinzaparin.

Common side effect: Cardiovascular: Sudden fall in blood pressure, bradycardia, flushing, hypotension. Central nervous system: Lassitude

Gastrointestinal: Nausea, vomiting. Hematologic: Hemorrhage. Respiratory: Dyspnea, pulmonary hypertension. Miscellaneous: Hypersensitivity reactions

Pregnancy Risk Factor: C