

MWLCEMS SYSTEM
Continuing Education Packet

Esmolol

Brand Name: Breviblock

Classification: Class II Antidysrhythmic agent

Actions: Beta-adrenergic blocker resulting in decreases in chronotropic (heart rate), dromotropic (conduction rate), and inotropic (contractility) effects on the myocardium.

1. Depresses sinoatrial (SA) node automaticity
2. Increases refractory period of atrial and AV junctional tissue to slow conduction
3. Shortens action potential duration
4. Decreases myocardial contractility
5. Block sympathetic nervous system beta receptors, predominantly beta1 receptors
6. Decreases myocardial oxygen consumption.

Pharmacokinetics:

Onset of action: 2 – 10 minutes (quickest when loading doses are administered)

Duration of hemodynamic effects: 10 – 30 minutes; prolonged following higher cumulative doses, extended duration of use.

Metabolism: In blood by red blood cell esterases; forms acid metabolite (negligible activity; produces no clinically important effects) and methanol (does not achieve concentrations associated with methanol toxicity).

Half-life elimination: Adults: Esmolol: 9 minutes; Acid metabolite: 3 – 7 hours; elimination of metabolite decreases with end stage renal disease.

Excretion: Urine (73 – 88% as acid metabolite, < 2% unchanged drug)

After termination of infusion substantial recovery from beta blockade is observed in 10 – 20 minutes.

Indications:

Supraventricular Tachycardia

Esmolol hydrochloride is indicated for paroxysmal supraventricular tachycardia, the rapid control of ventricular rate in patients with atrial fibrillation or atrial flutter in perioperative, postoperative, or other emergent circumstances where short term control of ventricular rate with a short-acting agent is desirable. Esmolol hydrochloride is also indicated in noncompensatory sinus tachycardia where, in the physician's judgment, the rapid heart rate requires specific intervention. Esmolol hydrochloride is not intended for use in chronic settings where transfer to another agent is anticipated.

Hypertensive emergencies

Contraindications:

Sinus bradycardia, 2nd or 3rd degree heart block, Cardiogenic shock, CHF, cardiac failure, hypersensitivity.

Use cautiously in patients with reactive airway disease (asthma, CHF) or renal disease

Adverse Effects:

Hypotension (in 20 – 50% of pts), diaphoresis, pallor, flushing, peripheral ischemia, bradycardia, heart block, heart failure, sudden cardiac death

Dizziness, confusion, headache, fatigue, anxiety

Nausea, vomiting, fever

Bronchospasm, cough, wheeziness, nasal stuffiness

Urinary retention

Inflammation and induration at injection site

Dosage:

Maintenance dose is usually 25 – 50mcg/kg/min

Special Considerations:

- ⇒ Use cautiously with patients with a history of asthma, emphysema, CHF or kidney dysfunction.
- ⇒ Monitor vital signs and cardiac rhythm. **If heart block, bradycardia or hypotension develops, discontinue infusion immediately. Notify medical control.**
- ⇒ Drug may potentiate the hypoglycemic effects of insulin and prevents sympathetic symptoms of hypoglycemia
- ⇒ It masks sympathetic clinical indications of shock because the receptors are blocked

MWLCEMS SYSTEM

Esmolol
Post Test

Name: _____

Date: _____

Department: _____

1. The brand name for Esmolol is _____.
2. Explain how Esmolol decreases chronotropic effects on the myocardium.
3. Explain how Esmolol decreases dromotropic effects on the myocardium.
4. Esmolol is metabolized in _____ and excreted in the _____.
5. The duration of the hemodynamic effects of Esmolol is _____.
6. List three indications for the use of Esmolol.
 - A. _____
 - B. _____
 - C. _____
7. List 5 contraindications for the use of Esmolol.
 - A. _____
 - B. _____
 - C. _____
 - D. _____
 - E. _____
8. Esmolol needs to be used cautiously in patients with _____ and _____.
9. The usual maintenance dose of Esmolol is _____.
10. Esmolol masks the signs of hypoglycemia and shock.
 - A. True
 - B. False