

NURSING CLINICAL STANDARD

ESMOLOL (BREVILOC) CONTINUOUS INFUSION – ICU/Cardiac Progressive Care Unit

PURPOSE: To outline the management of patients receiving an esmolol infusion.

SUPPORTIVE DATA: Esmolol (Brevibloc) is an intravenous, short-acting beta₁ selective, adrenergic blocking agent. It decreases heart rate, blood pressure and to a lesser extent, myocardial contractility. It is indicated for short-term control of rapid ventricular rates associated with supraventricular tachyarrhythmias and for hypertension. When used for hypertension the patient may require higher doses, up to 300 mc/kg/minute.

Esmolol is contraindicated in sinus bradycardia, second and third-degree heart blocks, and hypotension

Drugs that potentiate the action of esmolol include: Beta blockers, digoxin, antihypertensives, diuretics, and calcium channel blockers.

Esmolol infusion may be administered in the cardiac Progressive Care Unit using a non-titrating dose for hypertension only.

ASSESSMENT:

1. Assess baseline vital signs and ECG rhythm before administration, a minimum of every 5 minutes post-rate change until desired heart rate and BP are achieved, then every 2 hours.
2. Determine concentration and verify dosage with every bag change and within one hour of assuming care of the patient or earlier as clinically appropriate. In addition, verify accurate dosage with every rate change.
3. Monitor for hypotension (common with infusion rates greater than 200 mcg/kg/minute) continuously.
4. Assess for the following adverse reactions/side effects a minimum of every 2 hours:
 - Signs and symptoms of impending congestive heart failure (CHF): shortness of breath, jugular venous distension, crackles
 - Signs and symptoms of bronchoconstriction (e.g. wheezing; drug becomes a non-selective beta-adrenergic blocker at infusion rates greater than 300 mcg/kg/minute)

ADMINISTRATION:

5. Administer esmolol as ordered.
 - Order to include titration parameters, desired heart rate, and blood pressure (ICU only)
 - Administer esmolol as ordered. Usual dosage:
 - Loading dose of 500 mcg/kg over 1 minute (loading doses and boluses are optional and are given via Guardrails infusion pump)
 - Then infusion of 50 mcg/kg/minute for 4 minutes
 - May repeat same loading dose of 500 mcg/kg over 1 minute before increasing to 100 mcg/kg/minute and 150 mcg/kg/minute if therapeutic effect is inadequate (total of 3 boluses maximum)
 - Titrate infusion rate by 50 mcg/kg/minute increments every 4 minutes if therapeutic effect is not achieved
 - If desired heart rate or BP is not achieved after 150 mcg/kg/minute may increase infusion by 50 mcg/kg/minute every 4 minutes without further bolus until 300 mcg/kg/minute or parameters are achieved
 - Maximum safe dosage is 300 mcg/kg/minute (most patients respond to less than 200 mcg/kg/minute)

Note : Esmolol is not titrated in the Cardiac Progressive Care Unit

DISCONTINUATION:

6. Titrate off esmolol (ICU) or discontinue as ordered. Recommendation: within one hour after transitioning to an oral agent.

- SAFETY:** 7. Infuse via central venous catheter if available. If patient does not have a central venous catheter, avoid using a small vein.
- REPORTABLE CONDITIONS:** 8. Notify the provider for:
- Hypotension, dizziness
 - Symptomatic bradycardia, second or third degree atrial-ventricular (AV) block
 - Signs and symptoms of CHF
 - Bronchospasm
 - Inability to achieve desired parameter
- PATIENT/FAMILY TEACHING:** 9. Instruct on the following:
- Purpose of esmolol
 - Need for frequent monitoring
 - Notification of RN for dizziness, shortness of breath, wheezing
- ADDITIONAL STANDARDS:** 10. Refer to the following as indicated:
- Arterial line - ICU
 - Oxygen Therapy
 - Pulmonary Artery Catheter - ICU
- DOCUMENTATION:** 11. Document in accordance with documentation standards.

Initial date approved: 11/94	Reviewed and approved by: Professional Practice Committee Pharmacy & Therapeutic Committee Nurse Executive Council Attending Staff Association Executive Committee	Revision Date: 10/00, 03/05, 06/08, 3/15, 08/19
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REFERENCES:

LAC+USC Clinical Resources: Micromedix and UptoDate drug info (Lexi-comp)
Consult: LAC+USC Department of Pharmacy