

Enalaprilat Injection

Products approved in Canada¹:

DIN	Company	Product	Active Ingredient	Strength
02388499	STERIMAX INC	ENALAPRILAT INJECTION USP	ENALAPRILAT	1.25 MG / ML
01923846	SANDOZ CANADA INCORPORATED	VASOTEC IV	ENALAPRILAT	1.25 MG / ML

Official indication²:

Treatment of hypertension when oral therapy is not practical.

Off-label indication³:

Treatment of hypertensive emergencies.

Therapeutic alternatives³⁻⁶:

Indication	Alternatives	Comments
Hypertension when oral therapy not practical	Hydralazine <u>Adult</u> IV - 10 to 20 mg (may increase to 40 mg per dose if required). May repeat every 4 to 6 hours as needed (maximum 300-400 mg/24 hours). Infusion: 0.05 to 0.3 mg/min OR 0.1 mg/kg IV loading dose, then 1.5 to 5 mcg/kg/min IM - 10 to 50 mg per dose	Onset of effect with IV administration is 5 to 20 minutes; with IM administration 10 to 30 minutes. Contraindication: angina pectoris
	<u>Pediatric</u> 0.1 to 0.2 mg/kg (maximum 20 mg) IV or IM every 4 to 6 hours up to 1.7 to 3.5 mg/kg/day; or 50 to 100 mg/m ² /day in 4 to 6 divided doses; or continuous infusion 1.5 mcg/kg/min	
	Labetalol <u>Adult</u> IV - 20 mg slow IV push, then 40 to 80 mg every 10 minutes as needed to reduce blood pressure, up to a total dose of 300 mg/day.	Maximum effect in 5 to 15 minutes; duration 2 to 18 hours depending on dose
	<u>Pediatric</u> Infusion - 0.4 to 1 mg/kg/hour with a maximum of 3 mg/kg/hour	
	Metoprolol IV - 1.25 to 5 mg IV every 6 to 12 hours initially. Titrate to response. Some patients may need up to 15 mg every 3 to 6 hours.	Onset of action 20 minutes; duration 5 to 8 hours. Caution if heart failure, hypotension, bradycardia, heart block, bronchospasm.

PhentolamineAdult

IV /IM - 5 mg 1 to 2 hours prior to surgery for pheochromocytoma. Repeat as needed during surgery.

Pediatric

IV/IM – 1 mg or 0.1 mg/kg or 3 mg/m² 1 to 2 hours prior to surgery for pheochromocytoma.

Hypertensive emergency: In stable patients, the goal is to reduce blood pressure 25% within 1 hour, then further reduce to 160/100 to 160/110 mm Hg in the next 2 to 6 hours.

Vasodilators**Hydralazine**ADULT:

IV - 10 to 20 mg (may increase to 40 mg per dose if required). May repeat every 4 to 6 hours as needed (maximum 300-400 mg/24 hours).

Infusion - 0.05 to 0.3 mg/kg/min OR 0.1 mg/kg IV loading dose, then 1.5 to 5 mcg/kg/min

IM - 10 to 50 mg per dose

PREECLAMPSIA, ECLAMPSIA:

IV - 5 to 10 mg initially, then 5 to 20 mg every 20 to 30 minutes as needed

Infusion - 0.5 to 1.0 mg/hour

PEDIATRIC

IV or IM - 0.1 to 0.2 mg/kg (maximum 20 mg) every 4 to 6 hours up to 1.7 to 3.5 mg/kg/day; or 50 to 100 mg/m²/day in 4 to 6 divided doses; or

Infusion - 1.5 mcg/kg/min

Effects of IM hydralazine delayed compared with IV administration (see above)

Contraindication: angina pectoris

Nitroglycerin

Non-PVC sets: 5 mcg/min, increase every 3 to 5 minutes by 5 mcg/min; no response at 20 mcg/min, increase by 10 mcg/min every 3 to 5 minutes, can increase to 20 mcg/min increments if sub-optimal response

PVC sets: 25mcg/min to start, titrate up to response and patient tolerance.

Onset of effect is immediate; duration of effect 3 to 5 minutes

Contraindications: hypotension, increased intracranial pressure, constrictive pericarditis, or pericardial tamponade

Nitroprusside

Infusion: 0.25 to 0.3 mcg/kg/min initially, titrate every few minutes until desired blood pressure is reached

Onset of effect 30 to 60 seconds; effect will last as long as the infusion continues.

Phentolamine

IV - 1 to 5 mg for hypertensive crisis due to catecholamine release (maximum 15 mg).

Maximum effect in 2 minutes with IV administration; 20 minutes with IM administration.

Beta-blockers	
<p>Esmolol Perioperative tachycardia and hypertension: Initial dose 1.5 mg/kg IV to maximum of 100 mg over 30 seconds. If symptoms persist, may administer infusion of 0.15 to 0.3 mg/kg/min.</p>	<p>Esmolol duration of effect is very short – about 30 minutes</p> <p>Caution if heart failure, hypotension, bradycardia, heart block.</p>
<p>Labetalol IV - 20 mg stat, may repeat 20 to 80 mg every 10 minutes until supine blood pressure reaches desired level or total of 300 mg administered. Infusion - 0.5 to 2 mg/min to start, then adjust rate according to blood pressure up to 8 mg/min. Usual dose is 50 to 200 mg.</p>	<p>Maximum effect in 5 to 15 minutes; duration 2 to 18 hours depending on dose</p>
<p style="text-align: center;">Metoprolol</p> <p>IV - 1.25 to 5 mg every 6 to 12 hours.</p>	<p>Onset of effect 20 minutes; duration 5 to 8 hours.</p> <p>Caution if heart failure, hypotension, bradycardia, heart block</p>

Prepared by Karen Jensen MSc, BSP (medSask). Reviewed by Suzanne Gulka, BSP (RQHR), Carmen Bell, BSP (medSask)

References:

1. Drug Product Database. Health Canada website. Available at <http://webprod5.hc-sc.gc.ca/dpd-bdpp/dispatch-repartition.do?lang=eng> . Accessed 07Jan2015.
2. Sterimax Inc. Enalaprilat Injection monograph. Available at <http://webprod5.hc-sc.gc.ca/dpd-bdpp/info.do?code=87402&lang=eng>. Accessed 07Jan2015.
3. Enalaprilat monograph. In: The Ottawa Hospital Parenteral Drug Therapy Manual, 33rd edition, 2012.
4. ASHP. Table 2: Alternatives to IV Beta-Adrenergic Blockers in Specific Clinical Situations in Metoprolol Injection. Drug Shortages Available at <http://www.ashp.org/menu/DrugShortages/CurrentShortages/Bulletin.aspx?id=813> . Accessed 07Jan2015.
5. Ontario Guidelines Advisory Committee. Hypertension: Emergencies and Urgencies. Available at http://www.gacguidelines.ca/site/GAC_Guidelines/assets/pdf/HYPE05-Emergencies_and_Urgencies.pdf. Accessed 06Jan2015.
6. Elliott W, Varon J. Drugs used for the treatment of hypertensive emergencies. In: UpToDate online database. Available at www.uptodate.com sy subscription. Accessed 08Jan2015.
7. Various monographs. Lexicomp Online®, Lexi-Drugs®, Hudson, Ohio: Lexi-Comp, Inc.; January 29, 2015. Available at www.lexi-com by subscription. Accessed 08Jan2015.