

Metaraminol

APPLICABLE AREAS

THIS SECTION WILL BE LEFT BLANK FOR EACH HOSPITAL TO COMPLETE IN ACCORDANCE WITH LOCAL PRACTICE. EXAMPLES: ICU, ED, OR, WARD 2B

MECHANISM OF ACTION/PHARMACOLOGY

Metaraminol is a vasoconstrictor that predominantly stimulates α_1 receptors to cause peripheral vasoconstriction and increase blood pressure. Indirect effects on sympathetic nerve endings cause the release of endogenous noradrenaline, though stores may become depleted during prolonged use contributing to tachyphylaxis. In low doses metaraminol also has some β_1 receptor agonist activity, producing a positive inotropic effect on the heart.¹

Onset of action: 1–2 minutes²

Duration of action: 20–60 minutes²

Half-life: minutes.

INDICATIONS

Metaraminol is the vasoconstrictor of choice for the short-term management of acute hypotension and can be administered by peripheral intravenous catheter. If low blood pressure persists despite adequate fluid resuscitation, it is usual practice to switch to a noradrenaline infusion once central access is available.

PRECAUTIONS

- Hypersensitivity to metaraminol or sulfites (may contain sodium metabisulfite)²
- Hypotension due to uncorrected hypovolaemia
- Tachycardia or reflex bradycardia^{2,3}
- Cardiac arrhythmias¹
- Excessive and prolonged blood pressure elevation – sustained metaraminol use or overly frequent dosing can result in cumulative effects that persist even when therapy is discontinued, due to the long duration of action of the drug.¹

MEDICATION PRESENTATION

10 mg/1mL per vial

MEDICATION STORAGE

Store ampoules below 25°C. Protect from light.⁴

Infusion solutions are stable for up to 24 hours.¹

PREPARATION

	Incremental IV bolus	Syringe driver
Prescribe	10 mg in 20 mL	20mg in 40mL
Make up infusion in	Glucose 5%*	Glucose 5%*
Volume to be drawn up into the syringe	19 mL	38 mL
Drug dose to be added	10 mg (1 mL)	20 mg (2 mL)
Final volume	20 mL	40 mL
Final concentration	0.5 mg/mL	0.5 mg/mL
1mL/hr =	0.5 mg/h	0.5 mg/hr

*Glucose 5% is preferred for dilution of all inotropes and vasopressors. However, metaraminol is also compatible with sodium chloride 0.9%.⁴

ADMINISTRATION – THIS GUIDELINE IS INTENDED FOR CENTRAL ACCESS ONLY

The intravenous bolus injection is given in small incremental doses. See 'Dosing'. **Do not bolus entire syringe contents as a single dose.**

or

Continuous intravenous infusion via a large peripheral vein or central access line.⁴

If administering via a large peripheral vein, ensure another line is accessible for continuity of infusion if the primary access site fails. Monitor the access site every time patient observations are recorded – at least every 15–30 minutes.

Infusions should be administered via a syringe driver, preferably with medication error reduction software enabled.

For continuous infusions, avoid administration in lines where other drugs or fluids may be bolused or flushed.⁵

DOSING

Intravenous bolus injection:

0.5 to 1mg (1 to 2mL) every 2–5 minutes as required, via peripheral or central intravenous access.

If cumulative doses exceeding 10mg are necessary, consider commencing metaraminol or noradrenaline infusion.

Continuous intravenous infusion:

0.5 to 10mg/hr.

Titrate in accordance with prescribed blood pressure parameters.

Evidence to support the safety and efficacy of metaraminol infusions is limited.⁶ Noradrenaline infusions are preferred if ongoing vasopressor support is anticipated and central intravenous access can be obtained. There is no correlation between metaraminol and noradrenaline dosing requirements.⁷

Maximum dose: up to 0.3mg/kg/hr has been reported in the literature.⁷

MONITORING

- Continuous blood pressure and cardiac monitoring for the duration of the infusion⁴
- Monitor fluid balance
- Monitor peripheral vein infusion site for signs of extravasation, which can cause local tissue necrosis⁴

SIDE EFFECTS

- Bradycardia – as a reflex to the increase in blood pressure
- Arrhythmias.²

COMPATIBILITIES

Consult the following references, which are available online through the Clinicians Health Channel:

- Australian injectable drugs handbook
- Trissel's™ in IV compatibility (Micromedex) – from the site homepage, select the 'IV Compatibility' tab.

IMPORTANT DRUG INTERACTIONS

- Monoamine **oxidase inhibitors (MAOIs)** may potentiate the effects of metaraminol. Metaraminol acts in part by causing the release of noradrenaline from sympathetic nerve endings. MAOIs inhibit the metabolism of noradrenaline, resulting in higher noradrenaline levels. Dose metaraminol conservatively.^{2,8}
- **Tricyclic antidepressants (TCAs)** may potentiate the effects of metaraminol. Metaraminol acts in part by causing the release of noradrenaline from sympathetic nerve endings. TCAs inhibit the uptake of noradrenaline into adrenergic nerve endings, resulting in higher noradrenaline levels. Dose metaraminol conservatively.^{2,8}
- **Digoxin's** arrhythmogenic effects may be enhanced by metaraminol. Monitor digitalised patients for signs of ectopic arrhythmias.^{2,8}

References

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Authorised and published by the Victorian Government, 1 Treasury Place, Melbourne.

© State of Victoria, Australia, Safer Care Victoria, December 2018

ISBN 978-1-76069-719-8 (online/print)

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