Medicine Guideline

Phentolamine - antidote for extravasation of peripherally administered noradrenaline (norepinephrine)

Areas where Protocol/Guideline applicable	Critical Care areas ONLY
Authorised Prescribers:	Critical Care
Indication for use	Reversal of vasoconstriction and treatment of dermal necrosis and sloughing following extravasation of peripheral administration of noradrenaline (norepinephrine)
Clinical condition	In acute emergency situations and in accordance with local protocols, noradrenaline can be given via a peripheral IV line whilst trying to obtain central access. Phentolamine is to be used for the treatment of injection site extravasation and to prevent tissue necrosis following extravasation of noradrenaline peripheral infusion.
Proposed Place in Therapy	First line treatment to prevent sloughing and necrosis in areas in which peripheral noradrenaline extravasation has occurred.
Contra-indications	Hypersensitivity to phentolamine
Precautions	• Hypotension • History of cardiovascular disease; increased risk of tachycardia and cardiac arrhythmias • Cerebrovascular spasm and occlusion have been reported, usually in association with marked hypotensive episodes following parenteral administration • Gastritis or peptic ulcer
Important Drug Interactions	Other medications that cause hypotension. Monitor BP.
Dosage	Phentolamine 5 to 10 mg diluted in 10 mL sodium chloride 0.9%, infiltrated into the affected region via multiple subcutaneous injections.
Duration of therapy	Immediate use only, as soon as possible after extravasation is noted, but within 12 hours following extravasation.
Prescribing Instructions	Document the prescribing of phentolamine on the electronic medication chart. Phentolamine is not registered in Australia and is a Special Access Scheme (SAS) medication. To facilitate replacement and ongoing supply of this medication a SAS Category A form and patient consent for exceptional use of medicine form is required to be completed.

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Health
South Eastern Sydney
Local Health District

Administration Instructions	**Treatment of Extravasation[1]:** A. Notify Senior Medical Officer on duty B. Stop the noradrenaline infusion immediately[6] C. Do NOT remove the catheter/needle immediately D. Aspirate as much of the residual noradrenaline as possible, E. Do NOT flush the line[6] F. Outline the extent of extravasation marking on the skin to provide baseline for monitoring G. **The treatment for extravasation ischaemia is phentolamine**: **Using a fine needle, subcutaneously inject phentolamine 5 - 10 mg (diluted in 10 mL sodium chloride 0.9%) throughout the ischaemic area* as soon as possible after extravasation is noted[6].** **identified by its cold, hard, pale appearance* H. Once the wound has been irrigated and/or an antidote has been administered, the peripheral intravenous catheter should be removed and replaced, as needed, at a site remote from the site of extravasation.[8] I. **Request plastic surgery team review in-hours if extravasation occurs.** J. Log notification of incident in the Incident Information Management System (IMs+)
Monitoring requirements	• Outline extent of the extravasation by marking on the skin to provide baseline for monitoring. • Sympathetic blockade with phentolamine should result in blanching being reversed immediately. • Continue to monitor and observe the site if blanching returns notify Medical Officer as additional phentolamine injections may be required. • Request plastic surgery team review in-hours.
Management of Complications	Hypotension is the most noted side-effect. Monitor BP continuously if possible, or every 5 minutes for 1 hour after administration. Escalate to Senior Medical Officer.
Storage requirements	Phentolamine should available in all the clinical areas where peripheral noradrenaline infusion is authorised. Store in accordance with manufacturers advice. If unsure contact the site Pharmacy Department. The reconstituted solution should be used immediately and should not be stored[1]

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Basis of Protocol/Guideline: (including sources of evidence, references)	1. Cardenas-Garcia, J., Schaub, K. F., Belchikov, Y. G., Narasimhan, M., Koenig, S. J., & Mayo, P. H. (2015). Safety of peripheral intravenous administration of vasoactive medication. Journal of hospital medicine, 10(9), 581-585 2. Loubani OM et al. A systematic review of extravasation and local tissue injury from administration of vasopressors through peripheral intravenous catheters and central venous catheters. J Crit Care 2015; 30 (3): 653.e9 – 653.e17. 3. Doellman D, Hadaway L, Bowe-Geddes LA, et al, "Infiltration and Extravasation: Update on Prevention and Management," J Infus Nurs, 2009, 32(4):203-11. [PubMed 19605999] 4. Flemmer L, Chan JS. A pediatric protocol for management of extravasation injuries. Pediatr Nurs. 1993;19(4):355-358, 424. [PubMed 8414723] 5. Hill JM. Phentolamine mesylate: the antidote for vasopressor extravasation. Crit Care Nurse. 1991;11(10):58-61. [PubMed 1720079] 6. Micromedex database: phentolamine. Accessed 15/7/2021 7. Phentolamine mesylate. US prescribing information. South Beloit, IL: Precision Dose Inc. Updated June 2019. Available from www.dailymed.nlm.nih.gov. Accessed 15/7/2021 8. UpToDate. Extravasation injury from chemotherapy and other non-antineoplastic vesicants. Updated Jan 2020. Accessed 26/11/2021
Groups consulted in development of this guideline	POWH ED Nursing Staff POWH ED Medical Staff POWH Pharmacy

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GOVERNANCE	
Enactment date *Reviewed* (Version 2) *Reviewed* (Version 3)	December 2017 October 2021 October 2023
Expiry date:	October 2026
Ratification date by SESLHD DTC	6th November 2023
Chairperson, DTC	Dr John Shephard
Version Number	2