

CIRCULAR

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**PROTOCOL FOR ADMINISTRATION OF
INTRAVENOUS HYDRALAZINE
FOR SEVERE HYPERTENSION IN PREGNANCY**

This protocol was developed by the NSW Pregnancy and Newborn Services Network's High Risk Obstetric Advisory Group. It has been endorsed by the NSW Maternal and Perinatal Committee and is now issued as policy by NSW Health.

The intended users are medical staff, midwives, registered nurses, and Air Ambulance and Royal Flying Doctor Service flight nurses in emergency obstetric situations.

The protocol should only be used in consultation with specialists who are familiar with the management of severe hypertension in pregnancy.

Introduction

Severe hypertension, (either systolic greater than or equal to 170 mm Hg and/or diastolic greater than or equal to 110 mm Hg) is an obstetric emergency which requires immediate multidisciplinary management (obstetrician, neonatologist, anaesthetist), therefore appropriate transfer to a tertiary level hospital should be considered.

To prevent maternal intracerebral haemorrhage, antihypertensives should be used to lower blood pressure in the short-term pending delivery or in special circumstances such as medical retrieval. Lowering the blood pressure does not solve the underlying problems of multi-system disease ¹.

Agents used to control severe hypertension in pregnancy include parenteral hydralazine, labetalol, diazoxide, and oral or sublingual nifedipine.

A Cochrane Systematic Review suggests that there is no evidence that one drug is better than another, and that clinicians should use the drug with which they are most familiar ².

Intravenous hydralazine (Apresoline) is the drug used in this protocol as it is the most widely studied and most commonly used agent to lower severe blood pressure in pregnancy.

Prior to administration, the mother should be informed of the need to lower her blood pressure, as well as the anticipated benefits and the possible side effects of hydralazine and / or other antihypertensives in pregnancy.

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In accordance with the provisions incorporated in the Accounts and Audit Determination, the Board of Directors, Chief Executive Officers and their equivalents, within a public health organisation, shall be held responsible for ensuring the observance of Departmental policy (including circulars and procedure manuals) as issued by the Minister and the Director-General of the Department of Health.

Indications for intravenous antihypertensives in pregnancy:

- If diastolic (Korotkoff V) greater than or equal to 110 mmHg for two readings **OR** systolic greater than or equal to 170 mmHg for two readings;
- Eclampsia;
- At lower levels of blood pressure than above but where there are persistent symptoms and/or failed oral antihypertensive therapy;
- In situations where rapid reduction of BP is required;
- In situations where oral administration of medication is impossible or unreliable, such as in labour or the unconscious state.

IV Hydralazine	
Principles and Method of Administration	
AIM:	to achieve a gradual reduction in blood pressure to safe levels (90mmHg diastolic), rather than a precipitate drop. NOTE: the risk of sudden hypotension can be greater in women with a contracted plasma volume.
TRADE NAME:	Apresoline
PRESENTATION:	20mg ampoule
INCOMPATIBILITIES:	aminophylline, ampicillin, hydrocortisone, sulphadiazine, dextrose diluents
DOSE:	<ul style="list-style-type: none"> • Hydralazine 5 mg as an intravenous bolus • repeat if necessary at 20 minute intervals, up to a maximum of 3 doses.
CONCOMITANT ANTIHYPERTENSIVE THERAPY:	<ul style="list-style-type: none"> • Continue existing oral antihypertensive therapy and review dose regimen; <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • If conscious, commence oral antihypertensive therapy (such as clonidine, labetalol or oxprenolol) in addition to the intravenous hydralazine
Persistent hypertension despite 3 boluses of IV hydralazine 5mg may be due to a compensatory reflex tachycardia:	
if heart rate <125 bpm:	<ul style="list-style-type: none"> • commence hydralazine infusion of 10 mg/hr. • Load 50 mg of IV hydralazine into 50 ml of normal saline (not a glucose containing solution); • run the infusion through an infusion pump at a rate of 10 ml/hr; • increase rate by 5ml/hr every 15 minutes until blood pressure is controlled.
if heart rate >125 bpm:	<ul style="list-style-type: none"> • give oral clonidine, labetalol or oxprenolol in addition to hydralazine infusion
MATERNAL and FETAL OBSERVATION AND MONITORING	<ul style="list-style-type: none"> • continuous CTG throughout administration of hydralazine and until BP is stable (30 minutes after the last dose); • record BP (Mercury sphygmomanometer, Korotkoff V) and pulse every 5 minutes after each bolus dose; • continue 5 minute BP and pulse until stable, thence measure hourly; • record BP every 15 minutes for the first hour of a continuous infusion, thence measure hourly if stable.

This Circular is due for revision:

Two years from release date, by the NSW Pregnancy & Newborn Services Network.

This Circular should be read in conjunction with:

Circular No. 02 /27 : *Magnesium sulphate (MgSO₄) infusion protocol for eclamptic seizure prophylaxis*

Circular No. 99/86:*Maternity emergencies* (Patient Matters Manual Part I Section 6.18)

Circular No. 99/71:*Policy for emergency obstetric and neonatal referrals* (Patient Matters Manual Part 1 Section 6.16)

Circular No. 01/64:*Policy on the handling of medication in New South Wales public hospitals* (Patient Matters Manual Part III Section 20.1)

Circular No. 97/140:*Hypertension in Pregnancy* (Patient Matters Manual Part III Section 17.13)

Circular No. 83/116:*Administration of intravenous medication by nurses* (Patient Matters Manual Part II Section 15.3)

Circular No. 89/95:*Medical retrieval* (Patient Matters Manual Part III Section 25.6)

¹ Brown, M. A. et al and The Australasian Society for the Study of Hypertension in Pregnancy, (2000). "The detection, investigation and management of hypertension in pregnancy: full consensus statement." Australian & New Zealand Journal of Obstetrics and Gynaecology **40**(2): 139-155.

² Duley, L and Henderson-Smart D.J. (2001). "Drugs for rapid treatment of very high blood pressure during pregnancy." In: The Cochrane Library, (1), Oxford: Update Software."

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