

Royal Hospital for Women (RHW)
BUSINESS RULE
COVER SHEET



Health
 South Eastern Sydney
 Local Health District

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NAME OF DOCUMENT	Severe and/or Urgent Hypertension in Pregnancy
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FORMER REFERENCE(S)	Severe and/or Urgent Hypertension in Pregnancy (LOP)
EXECUTIVE SPONSOR	Medical Clinical Co-director of Maternity Services
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SUMMARY	This Clinical Business Rule (CBR) provides guidelines for the management of severe and/or urgent hypertension in pregnancy to ensure patient safety and reduce maternal and neonatal morbidity
KEY WORDS	Hypertension, Pre-eclampsia

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Within this document we will use the term woman, this is not to exclude those who give birth and do not identify as female. It is crucial to use the preferred language and terminology as described and guided by each individual person when providing care.

1 BACKGROUND

The aim of this CBR is to manage blood pressure (BP) in a pregnant woman with severe and/or urgent hypertension, in order to prevent end-organ damage in the woman and the neonate

Severe hypertension is defined as a systolic BP (SBP) ≥ 150 mmHg and/or diastolic BP (DBP) ≥ 95 mmHg

Urgent hypertension is defined as SBP ≥ 160 mmHg and/or DBP ≥ 110 mmHg

2 RESPONSIBILITIES

2.1 Medical, Midwifery, and Nursing Staff: Identify, monitor, escalate and manage any woman presenting with severe or urgent hypertension

3 PROCEDURE

3.1 Clinical Practice

Management of Severe and/or Urgent Hypertension

- Measure blood pressure (BP) with woman seated feet flat on the floor and arm at heart level. During labour, measure BP in the lateral recumbent position
- Record the SBP at the first Korotkoff sound (K1) and the DBP at the disappearance of sounds (K5). Use the correct cuff size based on the woman's arm circumference
- Confirm the diagnosis of hypertension if BP reading is elevated, $\geq 140/90$ mmHg. BP reading should be repeated in 5 to 10 minutes to confirm diagnosis

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- Notify Team Leader (TL) immediately and activate Clinical Emergency Response System (CERS) if BP is $\geq 160/110$ mmHg
- Inform the obstetric physician team (registrar/fellow in hours, consultant out of hours) if the woman has refractory hypertension
- Administer short-acting antihypertensive agents, such as Intravenous (IV) hydralazine, IV labetalol, or oral immediate-release nifedipine (see Table 1 & Table 2), to manage severe or urgent hypertension:
 - 250mls IV normal (0.9%) saline should be given prior to acute blood pressure lowering to minimise the risk of hypotension
 - Aim to reduce SBP to ≤ 160 mmHg and DBP to ≤ 110 mmHg: the optimal target has not been determined. Consider lower target ($\leq 150/95$ mmHg) if clinically indicated
- Oral agents like labetalol, methyldopa, or nifedipine (SR) should be given concurrently, either commencing, supplementing or up-titrating regular antihypertensives, individualised to the woman's clinical history for ongoing management

Table 1

PRN Oral Medications for Severe Hypertension			
Drug	Dose	Onset of Action	Dosing
Oral Nifedipine (immediate release)	10-20mg, up to max of 40mg	30-45 minutes	Repeat after 45 minutes if required
Oral Hydralazine	25mg, up to max of 50mg	60 minutes	Repeat after 60 minutes if required

Table 2

PRN IV Medications for Severe/Urgent Hypertension			
Drug	Dose	Maximum Dose	Onset of Action
IV Hydralazine (See Table 3)	10mg [^] , up to 20mg. Push over 3-10mins	20mg	20 minutes
IV Labetalol (See Table 4)	20mg, up to 80mg Push over 2 mins	80mg	5 minutes

[^]First dose 5mg if fetal compromise

NB. IV antihypertensive agents are preferred for intra-partum management due to delayed gastric emptying

- Perform continuous electronic fetal monitoring (CEFM) with cardiotocograph (CTG) if IV antihypertensives administered
- Assess the woman for pre-eclampsia if not already confirmed by screening for symptoms, signs and performing relevant laboratory tests
- Consider corticosteroids in woman at risk of birth before 34 weeks

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- Consider magnesium sulphate for eclampsia prophylaxis in woman at risk. Loading dose of 4g IV followed by a maintenance dose of 1g/hour for 24 hours (see [Magnesium Sulphate for Eclampsia or Eclampsia](#) Prophylaxis CBR)
- Monitor BP every 5-15 minutes during acute management until it stabilises ($\leq 150/95$) for 3 readings, then hourly for 4 hours before returning to routine monitoring
- Consider birth in a woman with severe hypertension or preeclampsia, where there is maternal or fetal compromise
- Document in medical record all interventions and treatments, including BP readings, medications administered, fetal monitoring, and any changes in the woman's condition

Persistent/Refractory Severe Hypertension

- Consider administration of IV hydralazine or labetalol stat dose if oral nifedipine was used as first line agent
- Consider repeat administration of stat IV antihypertensive medications (See Table 2)
- Consider changing to infusion after 2 doses of IV hydralazine or 4 doses of IV labetalol
- Titrate IV infusion of hydralazine (see Table 3) or Labetalol (see Table 4) to BP response
- Escalate care to Birth Unit (BU) or Close Observation Unit (COU), as appropriate

Administration of IV Hydralazine (table 3) and Labetalol (table 4) Bolus or Infusion

- Perform the following prior to the administration of IV Hydralazine or Labetalol:
 - Commence CEFM with CTG
 - Administer fluid pre-load of 0.9% sodium chloride 250mL IV immediately in pregnant woman
- Administer as outlined in Table 3 and 4
- Consult with obstetric physician for additional support as required

Table 3

IV Hydralazine	Administration	Dosing
Bolus	<ol style="list-style-type: none"> 1. Reconstitute one hydralazine 20mg vial with 1mL of water for injection 2. Dilute hydralazine 20mg to total of 20mL with 0.9% sodium chloride, to make a concentration of 1mg/mL 	<ul style="list-style-type: none"> • Administer initial dose of hydralazine 10mg IV bolus slowly over 3-10 minutes • Record BP every 5 minutes for 20 minutes • If BP remains $\geq 160/110$ repeat dose of hydralazine 10mg IV after 20 minutes • If BP stabilises at $\leq 150/95$mmHg then record BP hourly for 4 hours, then return to routine monitoring
Infusion (COU or BU)	<ol style="list-style-type: none"> 1. Reconstitute hydralazine 50mg with 2.5mL of water for injection 2. Dilute hydralazine 50mg to a total of 50mL with 0.9% sodium chloride, for a concentration of 1mg/mL and infuse via syringe driver 	<ul style="list-style-type: none"> • Commence infusion at 3mg/hour • Titrate IV Hydralazine as follows: <ul style="list-style-type: none"> ○ SBP ≥ 155mmHg: Increase by 1mg/hr every 20 minutes until SBP ≤ 155mmHg ○ SBP 126-154mmHg – no change ○ SBP ≤ 125mmHg – decrease by 1mg/hr every 20 minutes until infusion ceased • Record BP and HR every 5 minutes until BP stabilises at $\leq 150/95$mmHg for 20 minutes – then perform hourly for 4 hours, then return to routine monitoring

- Monitor and recognise potential adverse effects of IV hydralazine which include:
 - tachycardia
 - palpitations
 - angina symptoms
 - headache
 - Gastrointestinal disturbance

- Use IV Hydralazine with caution if woman is dehydrated or has renal impairment

Table 4

IV Labetalol	Administration	Dosing
<p>Bolus</p>	<p>Administer preparation as is, 100mg/20mL (i.e. 5mg/mL)</p>	<ul style="list-style-type: none"> • Administer initial dose of labetalol 20mg IV bolus slowly over 2 minutes • Record BP and HR every 5 minutes until BP stabilises at $\leq 150/95$mmHg for 20 minutes, then hourly for 4 hours, then return to routine monitoring • If remains above 160/110mmHg repeat dose of labetalol 20mg IV every 10 minutes, up to maximum 80mg
<p>Infusion (COU or BU)</p>	<p>Dilute labetalol 100mg/20mL to total of 50mL with 0.9% sodium chloride, to make a concentration of 2mg/mL and infuse via syringe driver</p>	<ul style="list-style-type: none"> • Commence continuous cardiac monitoring until 6 hours after completion of infusion • Commence infusion at 10mL/hr (20mg/hr) <ul style="list-style-type: none"> ○ Infuse via dedicated peripheral or central lumen ○ Do not attach to a two-way infusion, as an inadvertent bolus may be delivered • Titrate to target BP by doubling/halving infusion every 30 minutes • Record BP and HR every 15 minutes for a minimum of 3 times until BP stabilises, then hourly • Discontinue by weaning over 1-2 hours when BP $\leq 150/95$mmHg 3 times

WARNING: Refer to Australian injectable drugs handbook for further administration information
 Do not mix labetalol with 5% sodium bicarbonate or any other drugs
 Labetalol is also compatible with Hartmann's, Ringer's, 5% glucose, sodium chloride 0.9% and glucose in solutions

Precautions/Contraindications with use of IV Labetalol:

- Bronchial asthma or chronic obstructive pulmonary disease
- Cardiogenic shock
- Conditions associated with severe and prolonged hypotension
- Postural hypotension
- Overt cardiac failure
- Second- and third-degree atrioventricular block
- Severe sinus bradycardia

3.2 Documentation

- Medical record

3.3 Education Notes

- Urgent hypertension in pregnancy is typically managed when blood pressure reaches or exceeds 160/110 mmHg, this level poses a risk for complications such as stroke, eclampsia, and placental abruption
- First-line agents for treating urgent hypertension include:
 - **IV labetalol:** Preferred for its rapid onset and favourable safety profile
 - **IV hydralazine:** Used if labetalol is not available or contraindicated
 - **Oral nifedipine (immediate release):** An alternative option that is effective and can be administered orally
- Oral Nifedipine 10mg tablets are available on Special Access Scheme. Medical Officers are required to submit TGA SAS online form
- Continuous blood pressure monitoring is critical when managing severe hypertension to prevent hypotension and ensure adequate blood flow to the fetus. The target is to reduce blood pressure to below 160/110 mmHg but not below 120/80 mmHg to maintain uteroplacental perfusion
- Management of severe hypertension should involve a multidisciplinary team, including obstetricians, maternal-fetal medicine specialists, physicians, anaesthetists, and neonatologists, especially when birth may be indicated
- For cases where severe hypertension is refractory to treatment, early birth may be indicated, depending on the gestational age and overall maternal-fetal condition. Decisions about the timing of birth should balance the risks of preterm birth against the risks of continued hypertension
- After initial stabilisation, ongoing monitoring of blood pressure and fetal status is essential, along with adjustments to the treatment regimen based on the woman's response to therapy

3.4 Implementation, communication and education plan

This revised CBR will be distributed to all medical, nursing and midwifery staff via @health email. The CBR will be discussed at ward meetings, education and patient quality and safety meetings. Education will occur through in-services, open forum and local ward implementation strategies to address changes to practice. The staff are asked to respond to an email or sign an audit sheet in their clinical area to acknowledge they have read and understood the revised CBR. The CBR will be uploaded to the CBR tab on the intranet and staff are informed how to access

3.5 Related Policies/procedures

- [Magnesium Sulphate for Eclampsia or Eclampsia Prophylaxis](#)
- [Hypertension – Management in Pregnancy](#)
- [Eclampsia Management](#)
- [Pre-eclampsia – Intrapartum Care](#)

3.6 References

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2. Australian Injectable Drugs Handbook 9th Edition- accessed via CIAP November 2024
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4. National Institute for Health and Care Excellence (NICE). (2019). Hypertension in Pregnancy: Diagnosis and Management.
5. Royal College of Obstetricians and Gynaecologists (RCOG). (2019). Management of Hypertensive Disorders of Pregnancy.
6. Seely, E. W., & Ecker, J. (2023). Preeclampsia and Hypertensive Disorders of Pregnancy: Update on Diagnosis and Management. *Obstetrics & Gynecology*, 141(5), 1011-1022
7. Melchiorre, K., et al. (2022). Management of hypertensive disorders in pregnancy: A guideline for maternal-fetal medicine specialists. *Journal of Maternal-Fetal & Neonatal Medicine*, 35(15), 2903-2911.

4 ABORIGINAL HEALTH IMPACT STATEMENT DOCUMENTATION

- Considerations for culturally safe and appropriate care provision have been made in the development of this Business Rule and will be accounted for in its implementation
- When clinical risks are identified for an Aboriginal and/or Torres Strait Islander woman or family, they may require additional supports. This may include Aboriginal health professionals such as Aboriginal liaison officers, health workers or other culturally specific services

5 CULTURAL SUPPORT

- For a Culturally and Linguistically Diverse CALD woman, notify the nominated cross-cultural health worker during Monday to Friday business hours
- If the woman is from a non-English speaking background, call the interpreter service: NSW Ministry of Health Policy Directive PD2017 044-Interpreters Standard Procedures for Working with Health Care Interpreters.

6 NATIONAL STANDARDS

- Standard 2 – Partnering with Consumers
- Standard 4 – Medication Safety
- Standard 5 – Comprehensive Care
- Standard 6 – Communicating for Safety
- Standard 8 – Recognising and Responding to Acute Deterioration

7 REVISION AND APPROVAL HISTORY

Date	Revision No.	Approval
16.12.24	3	RHW BRGC
10/12/2024	3	Maternity CBR Committee
Replaced: <i>Hydralazine – Administration of IV Hydralazine and Labetalol – Intravenous Labetalol for management of severe/urgent hypertension</i> Reviewed and endorsed Maternity Services LOPs 22/09/2020 Approved Patient Care Committee 5/02/2009 Obstetric Clinical Guidelines Group December 2008		