SEVERE AND/OR URGENT HYPERTENSION IN PREGNANCY

This LOP is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this LOP.

1. AIM

- To reduce and stabilise blood pressure (BP) to safe parameters (BP ≤150/90mmHg)
- Prevent end-organ damage to woman and/or neonate

2. PATIENT

- Woman ≥ 20 weeks gestation or within six weeks postpartum period with severe and/or urgent hypertension (HT) defined as:
  - severe hypertension: systolic BP(SBP) >150mmHg and/or diastolic BP (DBP) >95mmHg
  - urgent hypertension: SBP >160mmHg and/or DBP >110mmHg

3. STAFF

- Medical, midwifery and nursing staff

4. EQUIPMENT

- Non-mercury auditory sphygmomanometer with cuff of appropriate size. Use large cuff if arm circumference > 33cm
- Cardiotocograph (CTG) machine
- Intravenous (IV) cannula, 16 or 18 gauge

5. CLINICAL PRACTICE

- Measure BP ensuring the DBP is recorded at the phase V Korotkoff sound
- Recheck to confirm

Severe and/or Urgent Hypertension (see appendix 1):

- Notify midwife in-charge
- Activate Clinical Emergency Response (CERS) for medical review
- Notify private obstetrician if woman is a private patient
- Notify obstetric physician urgently for woman with refractory HT, and routinely for woman with severe HT
- Assess for features of pre-eclampsia e.g. clinical symptoms, protein/creatinine ratio, bloods- liver/kidney functions, full blood count
- Administer antihypertensives (see table 1 and 2), aiming to reduce SBP by 20-30mmHg and DBP by 10-15mmHg to prevent maternal cerebral haemorrhage. Be aware greater falls in BP may lead to a decrease in placental perfusion and fetal compromise.
- Consider administration of magnesium sulphate ($MgSO_4$) for eclampsia prophylaxis (see RHW LOP Magnesium Sulphate for Eclampsia or Eclampsia Prophylaxis)
- Consider escalation of care to Delivery Suite or Acute Care Ward, as appropriate
- Consider delivery in antenatal woman with severe HT

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Table 1

PRN medications for severe hypertension

DRUG	DOSE	ONSET OF ACTION	DOSING
Oral nifedipine	10-20mg, up to max 40mg	30-45 mins	Repeat after 45 minutes if required
Oral hydralazine	25mg, up to max 50mg	60 mins	Repeat after 60 minutes if required

Table 2

PRN medications for urgent hypertension

DRUG	DOSE	MAX	ONSET OF ACTION
IV hydralazine* (See table 3)	10mg^, up to 20mg Push over 3-10 mins	20mg	20 mins
IV labetalol* (See table 4)	20 mg, up to 80mg Push over 2 mins	80mg	5 mins

*Preferred agents for intra-partum patients
^First dose 5mg if fetal compromise

Persistent/Refractory Severe Hypertension

- Consider repeat administration of antihypertensive medications (see table 2)
- Consider IV infusion of hydralazine (see table 3) or labetalol (see table 4) titrated to BP response
- Consider escalation of care to Delivery Suite or Acute Care Ward, as appropriate

Administration of IV Hydralazine and Labetalol (Bolus or Infusion)

- Perform the following prior to administration of IV hydralazine or labetalol**:**
  - commence continuous electronic fetal monitoring with CTG
  - administer fluid pre-load of 0.9% sodium chloride 250mL IV stat in antenatal woman
- Administer as outlined in table 3 and 4
- Be aware neither medication can be used intramuscularly

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Table 3

IV HYDRALAZINE	ADMINISTRATION	DOSING
Bolus	Reconstitute one hydralazine 20mg vial with 1mL of water for injection Dilute hydralazine 20mg **to** 20mL with 0.9% sodium chloride, to make a concentration of 1mg/mL	• Administer initial dose of hydralazine 10mg IV bolus slowly over 3-10 minutes by medical officer or accredited RN/RM • Record BP every 5 minutes, for 20 minutes • If required, repeat dose of hydralazine 10mg IV after 20 mins • If BP stabilises at ≤155/95mmHg, then record BP hourly for 4 hours, then return to routine pre-eclampsia monitoring
Infusion (Acute Care Ward or Delivery Suite only)	Reconstitute hydralazine 50mg with 2.5mL of water for injection Dilute hydralazine 50mg **to** 50mL with 0.9% sodium chloride, for concentration of 1mg/mL and infuse via syringe driver	• Commence infusion at 3mg/hour • Titration of IV hydralazine: ○ **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 20 minutes until BP stabilises ≤155/95mmHg, then hourly

- Monitor for and recognise potential adverse effects of IV hydralazine i.e. tachycardia, palpitations, □ngina symptoms, flushing, headache, dizziness, gastro-intestinal disturbances. These usually occur at the start of treatment and generally subside in the further course of treatment

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

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Table 4

IV LABETALOL	ADMINISTRATION	DOSING
Bolus	Administer preparation as is, 100mg/20mL (i.e. 5mg/mL)	• Administer initial dose of labetalol 20mg IV bolus slowly over 2 minutes by medical officer (Registrar and above) • Record BP and HR every 5 minutes until BP stabilises at ≤155/95mmHg for 20 minutes, then hourly for 4 hours, and return to routine pre-eclampsia monitoring • If required, repeat dose of labetalol 20mg IV every 10 minutes, up to maximum 80mg

Infusion (Acute Care Ward or Delivery Suite only)	Dilute labetalol 100mg/20mL **to** 50mL with 0.9% sodium chloride, to make a concentration of 2mg/mL and infuse via syringe driver	• Continuous cardiac monitoring until 6 hours after completion of infusion
		• Commence infusion at 10mL/hour (20mg/hour)
		  ○ Infuse via a 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 or halving the infusion every 30 minutes, guided by BP
		• Record BP and HR every 15 minutes until BP stabilises, then hourly
		• Discontinue by weaning over 1-2 hours when BP consistently ≤155/95 mmHg

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% dextrose and glucose in sodium chloride solutions		

- Be aware of precautions or contraindications for use of IV labetalol:
  - bronchial asthma or chronic obstructive pulmonary disease
  - cardiogenic shock
  - conditions associated with severe and prolonged hypotension
  - postural hypotension
  - hypersensitivity to labetalol
  - overt cardiac failure
  - second and third degree Atrioventricular (AV) block
  - severe sinus bradycardia
- Monitor for and □ecognize potential adverse effects of IV labetalol i.e. bradycardia (cease if HR<60), hypotension (cease if SBP<130); fetal bradycardia

6. DOCUMENTATION

- Medical record

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7. EDUCATIONAL NOTES

- Hypertension in pregnancy is classified as SBP ≥140mmHg and DBP ≥90mmHg[1]
- Women with hypertension in pregnancy remain at risk for severe/urgent hypertension in the early postpartum period and need close monitoring during this time[3]
- Reducing SBP by 20-30mmHg and DBP by 10-15mmHg should protect the mother from cerebral haemorrhage without causing fetal distress [2,3]
- To reduce risk of sudden maternal hypotension and subsequent fetal hypoperfusion often leading to fetal distress, the administration of a preload of normal saline is recommended[1]
- Possible adverse outcomes from unmanaged severe or urgent hypertension:
  - Eclampsia
  - Cerebral haemorrhage
  - Encephalopathy
  - Placental abruption
  - Fetal distress
  - Maternal death

8. RELATED POLICIES/ PROCEDURES/GUIDELINES

- Magnesium Sulphate for Eclampsia or Eclampsia Prophylaxis
- Hypertension – Management in Pregnancy
- Eclampsia Management
- Pre-eclampsia – Intrapartum Care
- Obesity and weight gain in pregnancy, labour and postpartum

9. RISK RATING

- High

10. REFERENCES

1. Lowe S. A., Bowyer L., Lust K., McMahon L. P., Morton M. R., North R. A., Paech M. J., Said, J. M. (2014). Guidelines for the Management of Hypertensive Disorders of Pregnancy *Society of Obstetric Medicine of Australia and New Zealand (SOMANZ)*.
2. Brown, M., Magee L.,Kenny, L., Karumanchi, S., McCarthy, F., Saito, S., Hall, D., Warren, C., Adoyi, G., Ishaku, S. (2018). The hypertensive disorders of pregnancy: ISSHP classification, diagnosis & management recommendations for international practice *Hypertension, 72*, 24-43.
3. Butalia, S. Audibert, F.; Côté, A.M.; Firoz, T.; Logan, A.G.; Magee, L.A.; Mundle, W.; Rey, E.; Rabi, D.M.; Daskalopoulou, S.S.; Nerenberg, K.A. (2018). Hypertension Canada's 2018 Guidelines for the Management of Hypertension in Pregnancy. *Canadian Journal of Cardiology, 34*, 526-531.
4. MIMS Online. (2020). Retrieved May 2020, from MIMS Australia https://www.mimsonline.com.au/
5. Australian Injectable drugs handbook, 8th edition Accessed via CIAP on 22/09/2020. https://www.aidh.hcn.com.au

REVISION & APPROVAL HISTORY

Replaced : *Hydralazine - Administration of IV Hydralazine* and *Labetalol – Intravenous Labetalol for management of severe/urgent* hypertension
Reviewed and endorsed Maternity Services LOPs 22/9/20
Approved Patient Care Committee 5/2/09
Obstetric Clinical Guidelines Group December 2008

FOR REVIEW : DECEMBER 2022