STANDARD OPERATING PROCEDURE

Hypertension in Pregnancy

Special Region (1)

Union of Myanmar

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Hypertension in Pregnancy

Introduction

- Hypertensive disorders during pregnancy occur in women with pre-existing primary or

secondary chronic hypertension or it can develop as new-onset hypertension in the second half of pregnancy

- Hypertensive disorders during pregnancy carry risks for the woman and are among the

leading causes of maternal death.

- Hypertensive disorders also carry a risk for the baby in terms of higher rates of perinatal

mortality, preterm birth and low birth weight.

Definitions & Diagnostic Criteria

Hypertension in Pregnancy

Hypertension is defined as a:

- Systolic BP: ≥ 140 mmHg
- Diastolic BP: ≥ 90 mmHg
- Protocol: These readings must be confirmed by a second measurement (taken at least 4

hours apart unless the initial reading is severe, e.g., ≥ 160/110 mmHg).

Classification

Diagnostic Criteria Category Hypertension that is present at the booking visit or before 20 Chronic weeks of pregnancy. This includes patients already on Hypertension antihypertensives prior to pregnancy. New-onset hypertension occurring at or after 20 weeks of Gestational pregnancy without significant proteinuria. Hypertension New-onset hypertension after 20 weeks AND one or more of the following:

- Proteinuria: PCR ≥ 30 mg/mmol or ACR ≥ 8 mg/mmol.

Pre-eclampsia

- Organ Dysfunction: Renal, Hepatic, Neurological, or

Hematological.

- Uteroplacental Dysfunction: Fetal growth restriction (FGR).

Pre-eclampsia with severe hypertension (≥ 160/110 mmHg) and/or clinical symptoms (headache, visual disturbance, Severe Pre- epigastric pain) and / or biochemical and / or haematological eclampsia impairment. Convulsive condition associated with pre-eclampsia. Eclampsia HELLP Haemolysis, elevated liver enzymes and low platelet count Syndrome

Defining Proteinuria

Initial Screen: Use automated reagent strip (dipstick). A reading of ≥ 1+ or more is a

"trigger."

Confirmation: If ≥ 1+ or more, perform a Protein:Creatinine Ratio (PCR) or

Albumin:Creatinine Ratio (ACR).

- Significant Proteinuria: PCR ≥ 30 mg/mmol or ACR ≥ 8 mg/mmol.

Drugs used for Hypertension in Pregnancy

- Labetalol is first-line therapy and contraindicated in asthma, safe when breast feeding.

Dosage 100 mg bd to 500 mg qid

- Nifedipine is second-line therapy and safe when breastfeeding, Dosage 10 mg slow-release

bdto 40 mg slow-release bd

- Methyldopa is third-line therapy and contraindicated in depression, safe when breast

feeding. Dosage 250 mg bd to 1 g tds

- α-Blockers e.g., doxazosinis fourth-line therapy and safe when breast feeding. Dosage 1

mg od to 8 mg bd

- Hydralazine is fourth-line therapy and safe when breast feeding. Dosage 25 mg tds to 75

mg qid

- ACE inhibitors are contraindicated in pregnancy. They can be used in postpartum and safe

when breast feeding Dosage 5 mg to 20 mg bd.

- ACE inhibitors, angiotensin II receptor antagonists (ARB) and thiazide or thiazide-like

diuretics are not for use in pregnancy as they can cause congenital anomalies and neonatal complications. They must be stopped if the women become pregnant (preferably within 2 working days of notification of pregnancy) and offer alternatives. ARBs and Diuretics should not be used in breast feeding women.

Management of Hypertension in Pregnancy

Reducing the risk of hypertensive disorders in pregnancy

- Tell women to seek advice from a healthcare professional immediately if they experience

any symptoms of severe pre-eclampsia:

- severe headache
- problems with vision such as blurring or flashing before eyes
- vomiting
- severe pain just below ribs
- sudden swelling of face, hands or feet
- Lifestyle interventions: Offer advice on rest, exercise
- Advise pregnant women with following risk factors to take 75 mg to 150 mg of aspirin

daily from 12 weeks until the birth of the baby.

- High Risk (1 factor needed):
- Hypertensive disease in previous pregnancy,
- Chronic kidney disease, autoimmune disease (SLE/APS)
- Type 1 or 2 Diabetes
- Chronic Hypertension.
- Moderate Risk (2 factors needed):
- First pregnancy

- Age ≥40
- Pregnancy interval ≥10 years
- BMI ≥35kg/m2
- Family history of pre-eclampsia
- Multiple pregnancy.
- Carry out an ultrasound for fetal growth and amniotic fluid volume assessment and

umbilical artery doppler velocimetry starting at between 28 and 30 weeks (or at least 2 weeks before previous gestational age of onset if earlier than 28 weeks) and repeating 4 weeks later in women with previous:

- severe pre-eclampsia
- pre-eclampsia that resulted in birth before 34 weeks
- pre-eclampsia with a baby whose birth weight was less than the 10th centile
- intrauterine death
- placental abruption

Management of Chronic Hypertension

4.2.1. Treatment Threshold & Target

- Medication Review: * Immediately stop ACE inhibitors, ARBs, and Thiazide-like

diuretics

- Offer antihypertensive treatment if BP is confirmed at ≥ 140/90 mmHg.
- Treat with first-line oral labetalol.
- Nifedipine for women in whom labetalol is not suitable, or methyldopa if both labetalol

and nifedipine are not suitable.

- Aim to maintain BP at ≤ 135/85 mmHg.
- Encourage the woman to lower dietary sodium intake or use sodium substitute.

4.2.2. Maternal Monitoring

- Antenatal appointments
- Weekly appointments if hypertension is poorly controlled
- Appointments every 2 to 4 weeks if hypertension is well-controlled.
- Investigation: Routine AN investigation plus Liver function tests (LFTs), Renal function

tests (U&E, Creatinine) and Uric acid

- Prophylaxis: Prescribe 75–150 mg Aspirin daily from 12 weeks until birth.
- If secondary chronic hypertension, offer referral to specialist in hypertensive disorders.

4.2.3. Fetal Monitoring

- Auscultation: Check fetal heart rate at every clinical encounter.
- Ultrasound: Fetal growth and amniotic fluid volume assessment at 28 weeks, 32 weeks

and 36 weeks

- Umbilical Artery Doppler (UAD): Perform at 28 weeks, 32 weeks and 36 weeks
- CTG: Not required routinely unless there is a decrease in fetal movements, vaginal

bleeding, abdominal pain, deterioration in maternal condition or the BP is poorly controlled. 4.2.4. Delivery Planning

- If BP < 160/110 mmHg with or without antihypertensive treatment, do not offer birth

before 37 weeks.

- If BP < 160/110 mmHg after 37 weeks, with or without anti-hypertensive treatment, timing
- f birth and maternal and fetal indications for birth should be agreed between the woman

and the senior obstetrician.

- If planned early birth is necessary, offer a course of antenatal corticosteroids and

magnesium sulfate if indicated. 4.2.5. Intrapartum care Hypertension (BP ≤ 159/109 mmHg)

- Continue antenatal antihypertensive treatment.
- Measure BP hourly.
- Carry out haematological and biochemical monitoring according to criteria from antenatal

period, even if regional analgesia being considered.

- If BP stable, do not routinely limit duration of second stage.

Severe hypertension: (BP ≥ 160/110 mmHg)

- Continue antenatal antihypertensive treatment.
- Measure BP continually.
- If BP controlled within target ranges do not routinely limit duration of second stage.
- If BP does not respond to initial treatment advise operative birth.

Management of Gestational Hypertension

4.3.1. Treatment Threshold & Target

- Offer antihypertensive treatment if BP is confirmed at ≥ 140/90 mmHg.
- Aim to maintain BP at ≤ 135/85 mmHg.

4.3.2. Maternal monitoring BP at Presentation BP Monitoring Frequency Investigations (mmHg) ≥ 140/90 to ≤ Once or twice weekly until target BP Weekly. 159/109 ADMIT. Every 15-30 mins until BP < 160/110 Daily until stable, ≥ 160/110 (Severe) mmHg. Monitor at least 4 times daily while then weekly. inpatient.
4.3.3. Fetal Monitoring

- Auscultation: Check fetal heart rate at every clinical encounter.
- Ultrasound: Fetal growth and amniotic fluid volume assessment at diagnosis and if

normal repeat every 2 to 4 weeks, every 2 weeks if severe hypertension persists.

- Umbilical Artery Doppler (UAD): Perform at diagnosis and if normal repeat every 2 to 4

weeks, every 2 weeks for severe hypertension.

- CTG: Not required routinely unless there is a decrease in fetal movements, vaginal

bleeding, abdominal pain, deterioration in maternal condition or the BP is poorly controlled (Severe gestational hypertension). Carry out at diagnosis for Severe gestational hypertension and repeat if conditions mentioned above occur. 4.3.4. Critical Transition: Screening for Pre-eclampsia Approximately 25% of women diagnosed with gestational hypertension will progress to pre- eclampsia.

- Urine Dipstick: Perform at every encounter. If ≥ 1+, immediately perform a PCR/ACR to

confirm pre-eclampsia.

- Symptom Review: Educate the patient on "Red Flag" signs (Headache, visual changes,

epigastric pain) at every visit. 4.3.5. Delivery Planning

- Do not offer early birth before 37 weeks to women with gestational hypertension whose

blood pressure is lower than 160/110 mmHg, unless there are other medical indications.

- For women with gestational hypertension whose blood pressure is lower than 160/110

mmHg after 37 weeks, timing of birth, and maternal and fetal indications for birth should be agreed between the woman and the senior obstetrician.

- If planned early birth is necessary, offer a course of antenatal corticosteroids and

magnesium sulfate if indicated. 4.3.6. Intrapartum care Hypertension: (BP 140/90 - 159/109 mmHg)

- Measure BP hourly.
- Continue antenatal hypertensive treatment.
- Carry out haematological and biochemical monitoring according to criteria from antenatal

period, even if regional analgesia being considered.

- Do not routinely limit duration of second stage of labour if BP stable.

Severe hypertension: (BP ≥ 160/110 mmHg)

- Measure BP continually.
- Continue antenatal hypertensive treatment.
- If BP controlled within target ranges, do not routinely limit duration of second stage of

labour.

- If BP does not respond to initial treatment, advise operative birth.

Postnatal care and Follow-up (For Chronic Hypertension and Gestational Hypertension)

- Measure BP: daily for first 2 days after birth
- at least once 3 - 5 days after birth
- as clinically indicated if antihypertensive treatment changed
- Continue antenatal antihypertensive treatment
- If no antenatal antihypertensive treatment, start antihypertensive treatment if BP ≥ 150/100

mmHg.

- If methyldopa was used during pregnancy, stop within 2 days of birth.
- If BP falls to < 130/80 mmHg, consider reducing antihypertensive treatment.
- If woman breastfeeding, avoid diuretic treatment for hypertension.
- If antihypertensive treatment is to be continued, offer medical review 2 weeks after transfer

to community care.

- Offer medical review at 6 - 8 weeks postnatal review.
- If antihypertensive treatment is to be continued after 6 - 8 weeks postnatal review, offer

specialist assessment of hypertension.

Management of Pre-eclampsia

4.4.1. Initial assessment and Admission

- Carry out a full clinical assessment at each antenatal appointment for women with pre-

eclampsia, and offer admission to hospital for surveillance and any interventions needed if there are concerns for the wellbeing of the woman or baby.

- Admit if any clinical concerns for the wellbeing of the woman or baby present or BP ≥

160/110 mmHg

- Concerns could include any of the following:
- Sustained systolic blood pressure of 160 mmHg or higher
- Any maternal biochemical or haematological investigations that cause concern, for

example, a new and persistent:

- rise in creatinine (90 micromol/litre or more, 1 mg/100 ml or more) or
- rise in alanine transaminase (over 70 IU/litre, or twice upper limit of normal

range) or

- fall in platelet count (under 150,000/microlitre)
- signs of impending eclampsia (severe headache, problems with vision, such as

blurring or flashing before the eyes, severe pain just below the ribs, vomiting, sudden swelling of the face, hands or feet)

- signs of impending pulmonary oedema
- other signs of severe pre-eclampsia (ongoing or recurring severe headaches, visual

scotomata, nausea or vomiting, epigastric pain, oliguria and severe hypertension)

- suspected fetal compromise

4.4.2. Treatment Threshold & Target

- Offer antihypertensive treatment if BP is confirmed at ≥ 140/90 mmHg.
- Aim to maintain BP at ≤ 135/85 mmHg

4.4.3. Maternal Monitoring BP at Presentation BP Monitoring Frequency Investigations (mmHg) ≥ 140/90 to ≤ At least every 48 hours, and more frequently if the Two times a 159/109 woman is admitted to hospital week Every 15 to 30 minutes until BP is less than 160/110 ≥ 160/110 Three times a mmHg, then at least 4

times daily while the woman is an (Severe) week inpatient, depending on clinical circumstances 4.4.4. Fetal Monitoring

- Auscultation: Check fetal heart rate at every clinical encounter.
- Ultrasound: Fetal growth and amniotic fluid volume assessment at diagnosis and repeat

every two weeks

- Umbilical Artery Doppler (UAD): Perform at diagnosis and repeat every two weeks.
- CTG: carry out at diagnosis. Not required routinely unless there is a decrease in fetal

movements, vaginal bleeding, abdominal pain, deterioration in maternal condition or the BP is poorly controlled. 4.4.5. Delivery Planning

- Timing:
- Threshold for Early Birth: Thresholds for considering planned early birth could include

any of the following known features of severe preeclampsia:

- inability to control maternal blood pressure despite using 3 or more classes
- f antihypertensives in appropriate doses
- maternal pulse oximetry less than 90%
- progressive deterioration in liver function, renal function, haemolysis, or

platelet count

- ongoing neurological features, such as severe intractable headache, repeated

visual scotomata, or eclampsia

- placental abruption
- reversed end-diastolic flow in the umbilical artery doppler velocimetry, a

non-reassuring cardiotocograph, or stillbirth.

- Involve a senior obstetrician in any decisions on timing of birth for women with pre-

eclampsia.

- Discuss with the anaesthetic team if birth is planned in a woman with pre-eclampsia.
- Discuss with the neonatal team if birth is planned in a woman with preeclampsia, and

neonatal complications are anticipated.

- Offer intravenous magnesium sulfate and a course of antenatal corticosteroids if planned

early birth is < 34 weeks.

- Consider a course of antenatal corticosteroids if planned birth is at 34 – 36+6 weeks.

4.4.6. Intrapartum care

- Measure BP
- hourly in women with hypertension -
- every 15 to 30 minutes until blood pressure is less than 160/110 mmHg in women

with severe hypertension

- Continue antenatal hypertensive treatment.
- Carry out haematological and biochemical monitoring according to criteria from antenatal

period, even if regional analgesia being considered.

- Do not routinely limit duration of second stage of labour if BP stable.

4.4.7. Postnatal care and Follow-up

- If no antenatal antihypertensive treatment, measure BP:
- at least 4 times a day while inpatient
- at least once 3 - 5 days after discharge.
- on alternate days if BP abnormal 3 - 5 days after birth.
- If BP ≥ 150/100 mmHg, start antihypertensive treatment.
- If taking antenatal antihypertensive treatment, measure BP:
- at least 4 times a day while the woman is an inpatient
- every 1 to 2 days for up to 2 weeks after transfer to community care until the woman

is off treatment and has no hypertension

- Continue antenatal antihypertensive treatment
- Consider reducing antihypertensive treatment if BP falls to < 140/90 mmHg
- Reduce antihypertensive treatment if BP falls below 130/80 mmHg
- Ask about severe headache and epigastric pain each time blood pressure is measured.
- If methyldopa is used to treat pre-eclampsia, stop within 2 days of birth.
- Measure platelet count, transaminases and serum creatinine 48 - 72 hours after delivery.
- Do not repeat if results normal.
- If results are abnormal repeat as clinically indicated until results return to normal.
- Do not measure fluid balance if creatinine within normal range.
- Transfer to community care if all of the following criteria have been met:
- there are no symptoms of pre-eclampsia

- blood pressure, with or without treatment, is 150/100 mmHg or less
- blood test results are stable or improving.
- Follow-up care and postnatal review
- Measure BP every 1 - 2 days for up to 2 weeks after transfer to community care,

until antihypertensive treatment stopped and no hypertension.

- Offer medical review if still taking antihypertensive treatment 2 weeks after transfer

to community care.

- If biochemical and haematological indices improving but within abnormal range,
- r not improving relative to pregnancy ranges, repeat platelet count, transaminases

and serum creatinine measurements as clinically indicated.

- At postnatal review (6 - 8 weeks after birth)
- Offer medical review
- Offer specialist referral if antihypertensive treatment still needed.
- Repeat platelet count, transaminases and serum creatinine measurements if

indicated.

- Carry out a urinary reagent-strip test.
- If proteinuria ≥ 1+, offer further review at 3 months to assess renal function and

consider offering referral for specialist renal assessment.

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