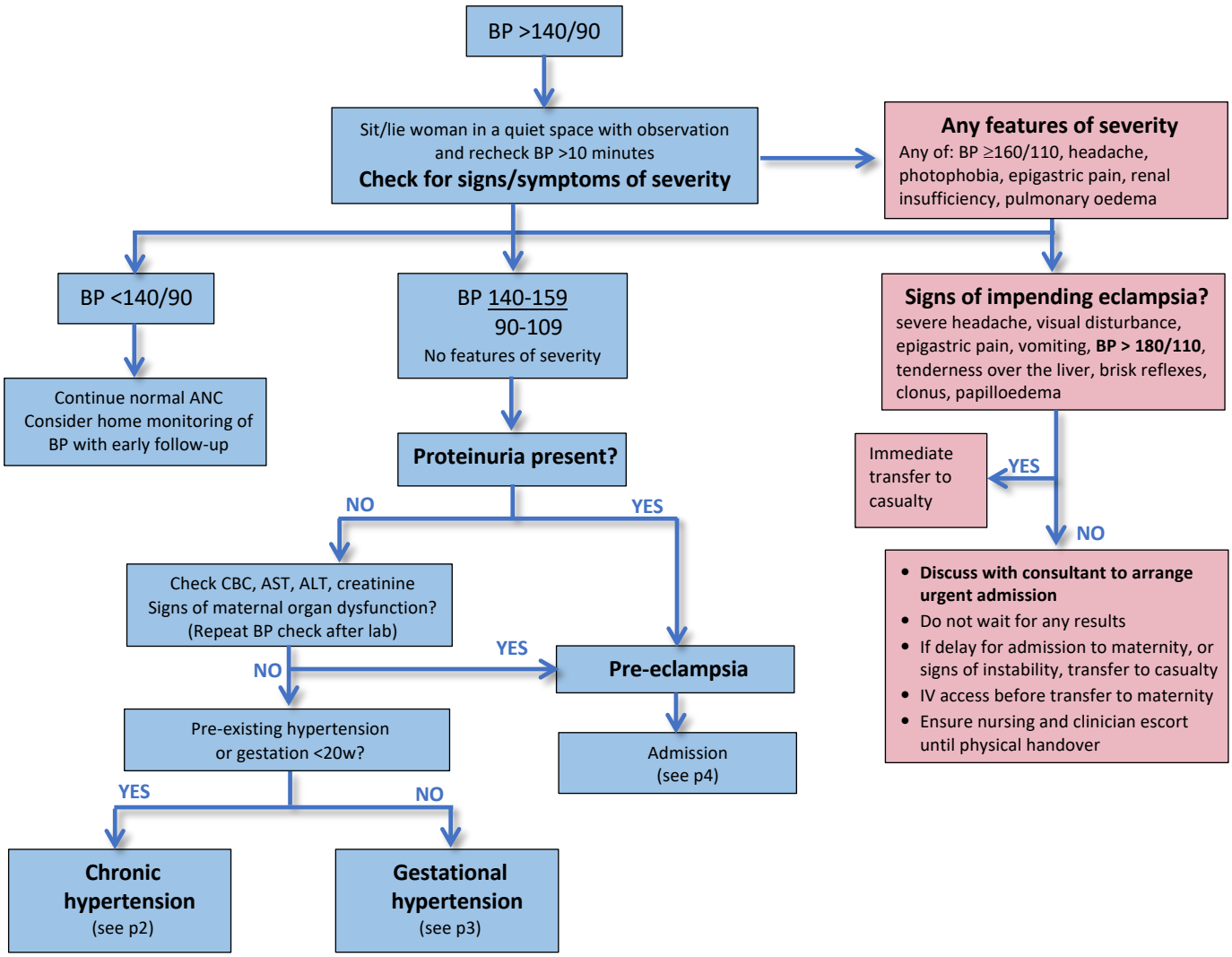
Hypertension in pregnancy – MCH & OPD management

There are 4 disorders of hypertension in pregnancy:

1. **Chronic (pre-existing) hypertension** – hypertension ***prior*** to conception, or diagnosed in the first 20w (BP persistently >140/90)
2. **Gestational hypertension** – hypertension develops after 20w gestation in the ABSENCE of proteinuria or other features of pre-eclampsia
3. **Pre-eclampsia/eclampsia** – new hypertension presenting after 20w gestation with one or more new-onset features, including significant proteinuria or maternal organ dysfunction (such as renal, liver, neurological or haematological complications)
4. **Pre-eclampsia/eclampsia superimposed on chronic or gestational hypertension** – worsening hypertension with new onset proteinuria or end organ damage in a woman who is known to have chronic or gestational hypertension

Diagnosis - Screen all pregnant women at **every** visit with BP check and urine dipstick for protein



ALL pregnant women (whether hypertensive or not) should be counselled about the following symptoms of pre-eclampsia and be advised to return to hospital IMMEDIATELY if they develop:

- Severe headache
- Visual disturbance (e.g. blurred vision, flashing lights)
- Severe pain just below the ribs
- Vomiting
- Sudden swelling of face, hands or feet
- Difficulty in breathing
- BP >160/110

Prevention of pre-eclampsia - when to give for prophylaxis		
Previous pre-eclampsia, HELLP or eclampsia: • Baseline CBC, AST, ALT, creatinine, urine protein at first appointment • Aspirin 150mg OD 12-36w • Check dietary calcium intake*	**High risk factors:** if any are present, give aspirin 150mg 12-36w; check dietary calcium intake* • History of gestational hypertension • Chronic hypertension • CKD • Type 1 or 2 diabetes • Autoimmune disease e.g. SLE, RA, antiphospholipid syndrome	**Moderate risk factors:** if ≥2 of these are present, give aspirin 150mg 12-36w; check dietary calcium intake* • First pregnancy • Age ≥40 • Pregnancy interval >10y • BMI >35 at first visit • Family history of pre-eclampsia • Multiple gestation

* (*Consider* calcium supplements if dietary intake very low, but evidence for supplements is poor and they are often not well tolerated. Diet is much more important – refer to nutritionist)

Antihypertensive medication to use in pregnancy (No clinical advantage of one over the other so choose based on cost)				
		Starting dose	**Titration**	**Notes**
First line	**Nifedipine**	20mg BD	Increase every 7-14d to average BP <140/90 Maximum dose 60mg BD	Preferred first choice due to cost Side effects: headache
Second line	**Methyldopa**	250mg BD	Increase every 2d to average BP <140/90 Maximum dose 1g TDS	Use if nifedipine not tolerated or dual agent required
Third line	**Labetalol**	100mg BD	Increase by 100mg each dose, every 2-3d to average BP <140/90 Maximum dose 1200mg BD	Use if nifedipine or methyldopa not tolerated, or if dual or triple therapy required (discuss with consultant before prescribing)
Note: ACEi, ARBs, Hydrochlorothiazide all **contraindicated in pregnancy!**				

1. Chronic hypertension *(hypertension prior to conception or diagnosed in first 20 weeks)*

Preconception advice - *discuss with all women of child-bearing age who have hypertension*

- Explain increased risk of complications (pre-eclampsia, C-section, premature delivery, low birth weight, perinatal death) so need for optimal control; lifestyle advice (see patient information leaflet 'High BP')
- Ideally pregnancy should be planned, with good control of BP before conception. Discuss contraception (see contraception guideline)
- Review medication prior to conception
  - Do not use ACEi, ARB, hydrochlorothiazide as increased risk of congenital malformations
  - Switch to nifedipine (or methyldopa or labetalol) and monitor closely
- Discuss with consultant if renal or cardiac condition
- Advise adequate dietary calcium intake. If planning pregnancy and low intake, consider supplementation.

Management in pregnancy

- **Discuss with consultant at first appointment and at every subsequent visit, refer to HRC if any complications or if difficult to control BP**
- Review diagnosis and possibility of secondary hypertension; examine carefully
- Baseline investigations: Creatinine (eGFR)
  If onset <40y or if diagnosed in pregnancy (i.e. <20w), then investigate for secondary hypertension (e.g. TSH, echo, renal US)
  Routine investigations as per ANC profile
- Medication: STOP any ACEi, ARBs or hydrochlorothiazide
  Start medication as per table above (first-line nifedipine)
  Aspirin 150mg from 12-36 weeks
  Check dietary intake of calcium, referral to nutritionist to ensure optimised
- Patient education: Explain increased risks, need for close follow-up and not to stop medication; advise purchase of own BP machine, danger signs and to return if red flags or BP>160/110, reiterate lifestyle advice (give patient information leaflet)
- Close follow-up, at least 4 weekly and **more often if hypertension poorly controlled**, **target BP<140/90**
- **Admit if BP>160/110 as per chart above**
- Continue antihypertensive medication unless sustained or symptomatic hypotension (e.g.<110/70)
- Ultrasound – 3rd trimester for fetal growth, AFI, RI
- Timing of delivery: Chronic hypertension on medications – 37-39+0w; if BP difficult to control - 36-37+0w

2. Gestational hypertension *(hypertension develops after 20w gestation in the ABSENCE of proteinuria or other features of pre-eclampsia)*

- Risk Factors – primigravida, ≥40y, >10y since last pregnancy, family history, BMI ≥35, CKD or CVD

Management of gestational hypertension – discuss with consultant at every contact			
Degree	**Mild** **140-149/90-99**	**Moderate** **150-160/100-160**	**Severe** **>160/110**
Admit to hospital?	• No • **Discuss with consultant** • Repeat BP checks while in MCH e.g. after lab • If >36w gestation, initiation of antihypertensives rarely appropriate; discuss with consultant to admit for delivery	• No but **close surveillance until BP controlled** • **Discuss with consultant** • Repeat BP checks while in MCH e.g. after lab • If >36w gestation, initiation of antihypertensives rarely appropriate; discuss with consultant to admit for delivery	Yes – until BPs controlled • **Discuss with consultant to arrange urgent admission** • Nifedipine PO 20mg STAT • Do not wait for blood test results • If delay for admission, or development of symptoms, transfer to casualty • IV access before transfer • Ensure nursing and clinician escort to maternity unit
Treat?	• Review with home readings in 1-2 weeks; start treatment if BP remains >140/90 • If patient can't return to clinic for review, may be safer to start treatment immediately, especially if risk factors are present or if BP persistently raised >4h – discuss with consultant	Yes – start oral medication as per table above (p2)	Yes – admit to maternity unit for emergency IV medication; then oral to maintain
Blood tests	Baseline CBC, AST, ALT, creatinine	Baseline CBC, AST, ALT, creatinine	Weekly CBC, AST, ALT, creatinine
Ultrasound	3rd trimester for fetal growth, AFI and RI	3rd trimester every 4w for fetal growth, AFI and RI	3rd trimester every 3-4w for fetal growth, AFI and RI
Follow-up	**Refer to HRC** to be seen every 1-2wks	Weekly	Weekly
Home/local clinic BP check	At least 2-3x/week	Daily	Daily
Target average BP	<140/90	<140/90	<140/90
Timing of delivery	Gestational hypertension – 37-38+0w		
Patient education	Risks, need for close follow-up, not to stop prescribed medication, lifestyle measures, danger signs, advise purchase of own BP machine for easier monitoring		

3. Pre-eclampsia *(New hypertension presenting after 20w gestation with one or more new-onset features, including significant proteinuria or maternal organ dysfunction, such as renal, liver, neurological or haematological complications)*

- Prevention with aspirin from 12w for those at high risk – see table page 2

Pre-eclampsia without severe features	Pre-eclampsia with severe features	HELLP	Eclampsia
BP ≥ 140-159/90-109 No evidence of end-organ damage and absence of any symptoms other than peripheral oedema	BP ≥ 160/110 Evidence of end-organ damage or symptoms: headache, photophobia, epigastric pain, renal insufficiency, pulmonary oedema, IUGR	Haemolysis, elevated liver enzymes, low platelets A variation of severe pre-eclampsia. Can be complete, with all features, or partial	• Convulsions occurring >20w gestation or within 1w of delivery, as a complication of pre-eclampsia. • Pre-eclampsia often not detected before the first convulsion • Convulsions look the same as epileptic tonic-clonic seizures, and involve jerking movements of eyes, jaw, neck and limbs. • The mother becomes unconscious and may stop breathing if the convulsions persist.
Seizures can occur without any warning, but **signs of impending eclampsia include:** severe headache, visual disturbance, epigastric pain, vomiting, **BP > 180/110**, tenderness over the liver, brisk reflexes (including clonus), papilloedema **TRANSFER IMMEDIATELY TO CASUALTY!**			
• Discuss with consultant for admission to maternity unit • Follow up in High Risk Clinic at discharge	• Emergency admission to maternity unit • **If BP>180/110 or if admission is going to be delayed, transfer to casualty** • IV access as soon as possible • Magnesium prophylaxis as for eclampsia: • 4gm IV loading dose over 5-10 minutes • 1-2gm/hour IV maintenance until 24hrs post-delivery or after last seizure • Additional seizures: additional bolus of 2g OR increase infusion rate to 1.5-2g/hr • Institute fetal surveillance if undelivered and fetus is viable • BP monitoring very 10 minutes; target BP is 140-160/90-110 • If BP still high despite magnesium, give **labetalol** 20mg IV over 2 minutes and check BP after 10 minutes • If BP still above target, see inpatient maternity guidelines for further dosing of labetalol and other agents		• Transfer to casualty • ABC • IV access • Magnesium prophylaxis: a) 4gm IV loading dose over 5-10 minutes b) 1-2gm/hour IV maintenance until 24hrs post-delivery or after last seizure (If unable to obtain IV access, give 5g IM in each buttock) c) Additional seizures: additional bolus of 2g OR increase infusion rate to 1.5-2g/hr
Deliver at 37w	• if >37wks, give MgSO4, deliver • if < 37wks, give MgSO4, attempt to finish antenatal steroids and then deliver; target max 34 weeks if lower gestation; deliver earlier if refractory BPs or worsening symptoms/signs		The key to management is stabilization of the mother prior to delivery. Do not rush the mother to theatre before control of convulsions.

Postnatal care and monitoring following hypertensive disorder of pregnancy

Need for intensive monitoring in post-natal period, especially if history of pre-eclampsia

BP monitoring:

- If taking methyldopa, switch to alternative on day 2 (increased risk of depression, see medication choices below)
- If discharged on medication, see by 1w to check the need and dose of medication
- If discharged without medication, see by 2w to check need for medication
- See all again at 6w (or sooner) to check the need and dose of medication
- If history of pre-eclampsia, ask about symptoms at any contact (can occur even 4-6w postpartum)
- BP should return to normal by 12w unless chronic hypertension

Treatment goals:

- Target on treatment BP <140/90; increase medication if BP above target
- If BP<130/80 reduce dose of antihypertensives

Monitoring:

- If history of pre-eclampsia, dip urine at 6w; if proteinuria, check creatinine
- If chronic hypertension, ensure follow-up and monitoring as per hypertension guideline

Drug choices:

- Nifedipine or amlodipine first-line
- Enalapril if other reasons for this (CVD, diabetes) – monitor creatinine and electrolytes
- If single agent not effective, use CCB + enalapril
- Avoid diuretics and ARBs when breastfeeding

Long-term risks:

- 1 in 5 risk of recurrence in future pregnancies – make sure she is aware of need for good antenatal care in future pregnancies and for aspirin prophylaxis
- Increased risk of hypertension and CVD in later life - lifestyle advice and advice re future monitoring

References

WHO recommendations on antenatal care for a positive pregnancy experience, WHO 2016; WHO recommendations on antiplatelet agents for the prevention of pre-eclampsia, 2021; ACOG Hypertension in Pregnancy; RCOG Guidelines of Hypertension in Pregnancy; https://www.sciencedirect.com/science/article/abs/pii/S0002937823002697; Obstet Gynecol. 2011 Aug. Timing of Indicated Late-Preterm and Early Term Birth; BMJ 2023;381:e071653; NICE guideline (NG133) June 2019; https://www.redwhale.co.uk/content/hypertension-in-pregnancy;

Version 1; May 2024