NICE Guidelines

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Outline

• Update on NICE guidelines
• New additions
• Controversies
Hypertension in pregnancy: diagnosis and management

NICE guideline
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www.nice.org.uk/guidance/ng133
Guideline

- Covers diagnosing and managing hypertension (high blood pressure), including preeclampsia, during pregnancy, labour and birth.
- Includes advice for women with hypertension who wish to conceive and women who have had a pregnancy complicated by hypertension.
- Aims to improve care during pregnancy, labour and birth for women and their babies.
Major severe maternal morbidity of pre-eclampsia include:

- Eclampsia
- Pulmonary oedema
- Acute kidney injury
- HELLP syndrome (haemolysis, elevated liver enzymes, low platelets)
- Disseminated intravascular coagulation (DIC)
- Cerebral haemorrhage
- Cortical blindness
Particularly high rates observed for:
- respiratory morbidity (aOR 21.0, 95% CI 15.6–28.3),
- cardiovascular morbidity (aOR 21.6, 95% CI 14.0–33.4),
- acute renal failure (aOR 32.1, 95% CI 15.8–64.9)
The aim:

Reducing the risk of hypertensive disorders in pregnancy
Symptoms of pre-eclampsia

• Advise pregnant women to see a healthcare professional immediately if they experience symptoms of pre-eclampsia

• Symptoms include:

• 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.

[2010, amended 2019]
Antiplatelet Therapy

- Advise pregnant women at high risk of pre-eclampsia to take 75–150 mg of aspirin daily from 12 weeks until the birth of the baby.
- Women at high risk are those with any of the following:
  - hypertensive disease during a previous pregnancy
  - chronic kidney disease
  - autoimmune disease such as systemic lupus erythematosus or antiphospholipid syndrome
  - type 1 or type 2 diabetes
  - chronic hypertension

[2010, amended 2019]
Antiplatelet Therapy

Advise pregnant women with more than 1 moderate risk factor for preeclampsia to take 75–150 mg of aspirin[1] daily from 12 weeks until the birth of the baby.

Factors indicating moderate risk are:

- first pregnancy
- age 40 years or older
- pregnancy interval of more than 10 years
- body mass index (BMI) of 35 kg/m2 or more at first visit
- family history of pre-eclampsia
- multi-fetal pregnancy

[2010, amended 2019]
Lifestyle

Give the same advice on rest, exercise and work to women with chronic hypertension or at risk of hypertensive disorders during pregnancy as healthy pregnant women

[2010, amended 2019]
Assessment of proteinuria in hypertensive disorders of pregnancy

- Interpret proteinuria measurements for pregnant women in the context of a full clinical review of symptoms, signs and other investigations for pre-eclampsia [2019]
- Use an automated reagent-strip reading device for dipstick screening for proteinuria in pregnant women in secondary care settings [2019]
- If dipstick screening is positive (1+ or more), use albumin:creatinine ratio or protein:creatinine ratio to quantify proteinuria in pregnant women [2019]
- Do not use first morning urine void to quantify proteinuria in pregnant women [2019]
- Do not routinely use 24-hour urine collection to quantify proteinuria in pregnant women [2019]
Assessment of proteinuria in hypertensive disorders of pregnancy

• If using protein:creatinine ratio to quantify proteinuria in pregnant women: 30 mg/mmol as a threshold for significant proteinuria if the result is 30 mg/mmol or above and there is still uncertainty about the diagnosis of pre-eclampsia, consider re-testing on a new sample, alongside clinical review. [2019]

• If using albumin:creatinine ratio as an alternative to protein:creatinine ratio to diagnose pre-eclampsia in pregnant women with hypertension: use 8 mg/mmol as a diagnostic threshold if the result is 8 mg/mmol or above and there is still uncertainty about the diagnosis of pre-eclampsia, consider re-testing on a new sample, alongside clinical review [2019]
Management of chronic hypertension in pregnancy
Pre-pregnancy

- Offer women with chronic hypertension referral to a specialist in hypertensive disorders of pregnancy to discuss the risks and benefits of treatment [2010, amended 2019]

- Advise women who take angiotensin-converting enzyme (ACE) inhibitors or angiotensin II receptor blockers[2] (ARBs): that there is an increased risk of congenital abnormalities if these drugs are taken during pregnancy to discuss alternative antihypertensive treatment with the healthcare professional responsible for managing their hypertension, if they are planning pregnancy to discuss alternative treatment with the healthcare professional responsible for managing their condition, if ACE inhibitors or ARBs are being taken for other conditions such as renal disease [2010, amended 2019]

- Stop antihypertensive treatment in women taking ACE inhibitors or ARBs if they become pregnant (preferably within 2 working days of notification of pregnancy) and offer alternatives [2010]
• Advise women who take thiazide or thiazide-like diuretics: that there may be an increased risk of congenital abnormalities and neonatal complications if these drugs are taken during pregnancy to discuss alternative antihypertensive treatment with the healthcare professional responsible for managing their hypertension, if they are planning pregnancy. [2010, amended 2019]

• Advise women who take antihypertensive treatments other than ACE inhibitors, ARBs, thiazide or thiazide-like diuretics that the limited evidence available has not shown an increased risk of congenital malformation with such treatments. [2010, amended 2019]
Treatment of chronic hypertension

- Offer pregnant women with chronic hypertension advice on: weight management, exercise, healthy eating, lowering the amount of salt in their diet. Provide this advice in line with the NICE guideline on hypertension in adults: diagnosis and treatment [2019]

- Continue with existing antihypertensive treatment if safe in pregnancy, or switch to an alternative treatment, unless: sustained systolic blood pressure is less than 110 mmHg or sustained diastolic blood pressure is less than 70 mmHg or the woman has symptomatic hypotension [2019]
Treatment of chronic hypertension

Offer antihypertensive treatment to pregnant women who have chronic hypertension and who are not already on treatment if they have: sustained systolic blood pressure of 140 mmHg or higher or sustained diastolic blood pressure of 90 mmHg or higher [2019]

When using medicines to treat hypertension in pregnancy, aim for a target blood pressure of 135/85 mmHg [2019]
Treatment of chronic hypertension

- When using medicines to treat hypertension in pregnancy, aim for a target blood pressure of 135/85 mmHg [2019]
• Consider labetalol to treat chronic hypertension in pregnant women. Consider nifedipine for women in whom labetalol is not suitable, or methyldopa if both labetalol and nifedipine are not suitable. Base the choice on any pre-existing treatment, side-effect profiles, risks (including fetal effects) and the woman's preference [2019]

• Offer pregnant women with chronic hypertension aspirin 75–150 mg once daily from 12 weeks [2019]

• Placental growth factor (PlGF)-based testing to help rule out preeclampsia between 20 weeks and up to 35 weeks of pregnancy, if women with chronic hypertension are suspected of developing pre-eclampsia. (See the NICE diagnostics guidance on PlGF-based testing to help diagnose suspected preeclampsia) [2019]
Antenatal appointments

• In women with chronic hypertension, schedule additional antenatal appointments based on the individual needs of the woman and her baby. This may include: weekly appointments if hypertension is poorly controlled appointments every 2 to 4 weeks if hypertension is well-controlled [2010, amended 2019]
Timing of birth

• Do not offer planned early birth before 37 weeks to women with chronic hypertension whose blood pressure is lower than 160/110 mmHg, or without antihypertensive treatment, unless there are other medical indications [2010, amended 2019]

• For women with chronic hypertension whose blood pressure is lower than 160/110 mmHg after 37 weeks, with or without antihypertensive treatment, timing of birth and maternal and fetal indications for birth should be agreed between the woman and the senior obstetrician [2010]

• If planned early birth is necessary (see recommendation 1.5.7), offer a course of antenatal corticosteroids and magnesium sulfate if indicated, in line with the NICE guideline on preterm labour and birth [2010, amended 2019]
Management of gestational hypertension
Assessment of gestational hypertension

- In women with gestational hypertension, a full assessment should be carried out in a secondary care setting by a healthcare professional who is trained in the management of hypertensive disorders of pregnancy [2010, amended 2019]
- In women with gestational hypertension, take account of the following risk factors that require additional assessment and follow-up:
  - nulliparity
  - age 40 years or older
  - pregnancy interval of more than 10 years
  - family history of pre-eclampsia
  - multi-fetal pregnancy
  - BMI of 35 kg/m2 or more
  - previous history of pre-eclampsia or gestational hypertension
  - pre-existing vascular disease pre-existing kidney disease [2010]
Drugs for the treatment of hypertension in pregnancy

<table>
<thead>
<tr>
<th></th>
<th>ORAL DOSE</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td><strong>FIRST-LINE</strong></td>
<td></td>
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</tr>
<tr>
<td>Labetalol</td>
<td>100 mg bd – 600 mg qds</td>
<td>Contraindicated in asthma. May be associated with neonatal bradycardia and hypoglycaemia</td>
</tr>
<tr>
<td>Nifedipine</td>
<td>10 – 40 mg MR bd Only slow release or modified release preparations should be used</td>
<td>May cause headache, flushing, swollen lower legs Possible interference with labour (tocolysis); Caution: hypotension reported with combination of magnesium and nifedipine – review combination treatment if occurs</td>
</tr>
<tr>
<td><strong>SECOND-LINE/ ALTERNATIVES</strong></td>
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<tr>
<td>Methyldopa</td>
<td>250 mg bd – 1g tds</td>
<td>May cause lethargy and dizziness, rarely depression (avoid if history of depressive illness), and deranged liver function tests.</td>
</tr>
<tr>
<td>Hydralazine</td>
<td>25 – 75mg tds</td>
<td>Second / Third line therapy.</td>
</tr>
<tr>
<td>Amlodipine</td>
<td>5 – 10 mg od</td>
<td>May be continued if already commenced pre-pregnancy or if nifedipine not tolerated or poor adherence with bd / tds therapy</td>
</tr>
<tr>
<td>Doxazosin</td>
<td>1mg od – 8 mg bd</td>
<td>Third line therapy</td>
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If the dose of a treatment is changed the woman needs to see a health care practitioner within 7 days.

<table>
<thead>
<tr>
<th>Labetalol (not in women with asthma)</th>
<th>Nifedipine Modified Release</th>
<th>Methyldopa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labetalol 100mg BD</td>
<td>Nifedipine Modified Release 20mg BD</td>
<td>Methyldopa 250mg TDS</td>
</tr>
<tr>
<td>Labetalol 100mg TDS</td>
<td>Nifedipine Modified Release 10mg BD</td>
<td>Methyldopa 500mg TDS</td>
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<tr>
<td>Labetalol 200mg TDS</td>
<td>Nifedipine Modified Release 20mg BD</td>
<td>Methyldopa 750mg TDS</td>
</tr>
<tr>
<td>Labetalol 300mg TDS</td>
<td>Nifedipine Modified Release 10mg BD</td>
<td></td>
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<tr>
<td>Labetalol 400mg TDS</td>
<td>Nifedipine Modified Release 30mg BD</td>
<td></td>
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<tr>
<td>Labetalol 600mg TDS</td>
<td>Nifedipine Modified Release 40mg BD</td>
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<tr>
<td>Labetalol 600mg QDS</td>
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Once the maximum dose of first line treatment is reached, add one of the other agents listed above. If this is not appropriate, seek specialist advice.

**Maximum dose of:**
- Labetalol 2.4g/day
- Nifedipine Modified Release 80mg/day (Nifedipress® MRI tablets for Clinicians prescribing within GTSI)
- Methyldopa 3g/day
Timing of birth

• Do not offer planned 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 [2010, amended 2019]

• 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 [2010, amended 2019]

• If planned early birth is necessary (see recommendation 1.5.7), offer a course of antenatal corticosteroids and magnesium sulfate if indicated, in line with the NICE guideline on preterm labour and birth [2010, amended 2019]
Management of pre-eclampsia
Assessing pre-eclampsia

• Assessment of women with pre-eclampsia should be performed by a healthcare professional trained in the management of hypertensive disorders of pregnancy [2010, amended 2019]

• Offer admission to hospital for surveillance and any interventions needed if there are concerns for the wellbeing of the woman or baby

• 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
  • signs of impending pulmonary oedema
  • other signs of severe pre-eclampsia
  • suspected fetal compromise any other clinical signs that cause concern. [2019]
• Consider using either the fullPIERS or PREP-S validated risk prediction models to help guide decisions about the most appropriate place of care (such as the need for in utero transfer) and thresholds for intervention [2019]

• When using a risk prediction model, take into account that:
  - fullPIERS is intended for use at any time during pregnancy
  - PREP-S is intended for use only up to 34 weeks of pregnancy
  - fullPIERS and PREP-S models do not predict outcomes for babies [2019]
Timing of birth

• Record maternal and fetal thresholds for planned early birth before 37 weeks in women with pre-eclampsia

• Thresholds for considering planned early birth could include (but are not limited to) any of the following known features of severe pre-eclampsia:
  • inability to control maternal blood pressure despite using 3 or more classes of 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 nonreassuring cardiotocograph
  • stillbirth
  • Other features not listed above may also be considered in the decision to plan early birth [2019]
Timing of birth

• Involve a senior obstetrician in any decisions on timing of birth for women with pre-eclampsia [2010, amended 2019]
• Discuss with the anaesthetic team if birth is planned in a woman with preeclampsia [2010, amended 2019]
• Discuss with the neonatal team if birth is planned in a woman with preeclampsia, and neonatal complications are anticipated [2010, amended 2019]
• Offer intravenous magnesium sulfate and a course of antenatal corticosteroids if indicated, if early birth is planned for women with preterm pre-eclampsia, in line with the NICE guideline on preterm labour and birth [2010, amended 2019]
Decide on timing of birth in women with pre-eclampsia as recommended in table 3 [2019]

<table>
<thead>
<tr>
<th>Weeks of pregnancy</th>
<th>Timing of birth</th>
</tr>
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<tbody>
<tr>
<td><strong>Before 34 weeks</strong></td>
<td>Continue surveillance unless there are indications (see recommendation 1.5.7) for planned early birth. Offer intravenous magnesium sulfate and a course of antenatal corticosteroids in line with the NICE guideline on preterm labour and birth.</td>
</tr>
<tr>
<td><strong>From 34 to 36+6 weeks</strong></td>
<td>Continue surveillance unless there are indications (see recommendation 1.5.7) for planned early birth. When considering the option of planned early birth, take into account the woman's and baby's condition, risk factors (such as maternal comorbidities, multifetal pregnancy) and availability of neonatal unit beds. Consider a course of antenatal corticosteroids in line with the NICE guideline on preterm labour and birth.</td>
</tr>
<tr>
<td><strong>37 weeks onwards</strong></td>
<td>Initiate birth within 24–48 hours.</td>
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</table>
Intrapartum care

• Offer care in accordance with the NICE guideline on intrapartum care for women with hypertension whether treated or untreated, and not just on the basis of blood pressure in labour [2010, amended 2019]

• Give women with chronic hypertension advice and care in line with the NICE guideline on intrapartum care for women with existing medical conditions or obstetric complications and their babies [2019]
Intrapartum care

• During labour, measure blood pressure: hourly, in women with hypertension every 15–30 minutes until blood pressure is less than 160/110 mmHg in women with severe hypertension [2010, amended 2019]

• Continue use of antenatal antihypertensive treatment during labour [2010]

• Determine the need for haematological and biochemical tests during labour in women with hypertension using the same criteria as in the antenatal period even if regional analgesia is being considered [2010]
Care during epidural analgesia

- Do not preload women who have severe pre-eclampsia with intravenous fluids before establishing low-dose epidural analgesia or combined spinal-epidural analgesia [2010, amended 2019]
Management of second stage of labour

• Do not routinely limit the duration of the second stage of labour in women with controlled hypertension [2010, amended 2019]

• Consider operative or assisted birth in the second stage of labour for women with severe hypertension whose hypertension has not responded to initial treatment [2010, amended 2019]
Anticonvulsants

- If a woman in a critical care setting who has severe hypertension or severe preeclampsia has or previously had an eclamptic fit, give intravenous magnesium sulfate [2010]

- Consider giving intravenous magnesium sulfate to women with severe preeclampsia who are in a critical care setting if birth is planned within 24 hours [2010]

- Consider the need for magnesium sulfate treatment, if 1 or more of the following features of severe pre-eclampsia is present:
  - ongoing or recurring severe headaches
  - visual scotomata
  - nausea or vomiting
  - epigastric pain
  - oliguria
  - severe hypertension
  - progressive deterioration in laboratory blood tests (such as rising creatinine or liver transaminases, or falling platelet count) [2010, amended 2019]
Collaborative Eclampsia Trial regimen for administration of magnesium sulfate

- A loading dose of 4 g should be given intravenously over 5 to 15 minutes, followed by an infusion of 1 g/hour maintained for 24 hours
- If the woman has had an eclamptic fit, the infusion should be continued for 24 hours after the last fit
- Recurrent fits should be treated with a further dose of 2–4 g given intravenously over 5 to 15 minutes [2010, amended 2019]
- Do not use diazepam, phenytoin or other anticonvulsants as an alternative to magnesium sulfate in women with eclampsia [2010, amended 2019]
Antihypertensives

- Treat women with severe hypertension who are in critical care during pregnancy or after birth immediately with 1 of the following:
  - labetalol (oral or intravenous)
  - oral nifedipine
  - intravenous hydralazine [2010, amended 2019]
- In women with severe hypertension who are in critical care, monitor their response to treatment: to ensure that their blood pressure falls to identify adverse effects for both the woman and the baby to modify treatment according to response [2010]
Summary

• Importance of working as a MDT managing hypertension in pregnancy

• Refer to NICE guidelines to deliver evidence based medicine

• Women have the right to be involved in discussions and make informed decisions about their care, as described in your care. Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding
Thank you for listening
Acute care toolkits

MBRRACE-UK Saving Lives, Improving Mothers’ Care - Report Launch Meeting 2019

Date: Tuesday 19th November 2019
Venue: The Studio, Birmingham

Medical Emergencies in Obstetrics (MEmO)
by GSTT Simulation and Interactive Learning (Sall) Centre

£30 - £400

e-LMppP - e-learning for Medical Problems in Pregnancy