NICE National Institute for Health and Care Excellence

NICE Pathways

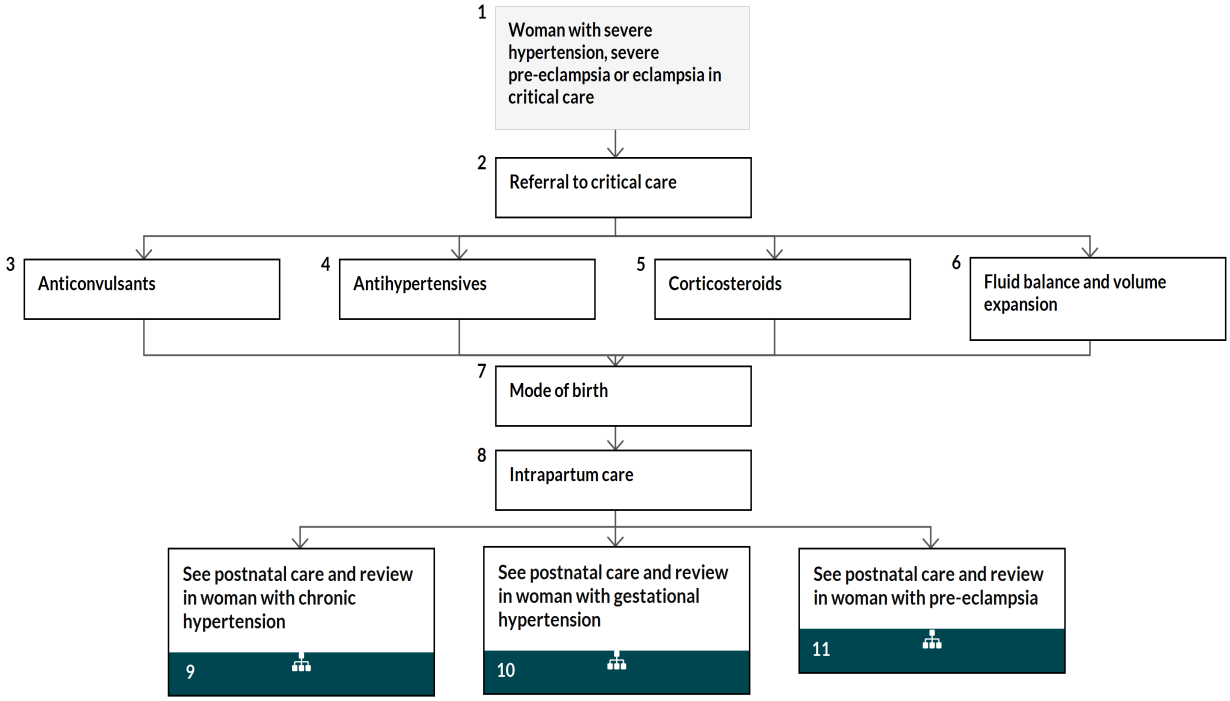
Severe hypertension, severe pre-eclampsia and eclampsia in critical care

NICE Pathways bring together everything NICE says on a topic in an interactive flowchart. NICE Pathways are interactive and designed to be used online.

They are updated regularly as new NICE guidance is published. To view the latest version of this NICE Pathway see:

http://pathways.nice.org.uk/pathways/hypertension-in-pregnancy
NICE Pathway last updated: 03 November 2020

This document contains a single flowchart and uses numbering to link the boxes to the associated recommendations.



1 Woman with severe hypertension, severe pre-eclampsia or eclampsia in critical care

No additional information

2 Referral to critical care

Refer women with severe hypertension or severe pre-eclampsia [See page 10] to the appropriate critical care setting using the criteria in the table below.

Level 3 care	Severe pre-eclampsia and needing ventilation
Level 2 care	Step-down from level 3 or severe pre-eclampsia with any of the following complications: eclampsia HELLP syndrome haemorrhage hyperkalaemia severe oliguria coagulation support intravenous antihypertensive treatment initial stabilisation of severe hypertension evidence of cardiac failure abnormal neurology

Level 1 care	Pre-eclampsia [See page 10] with hypertension Ongoing conservative antenatal management of severe preterm hypertension Step-down treatment after the birth

3 Anticonvulsants

If a woman in a critical care setting who has severe hypertension or severe pre-eclampsia [See page 10] has or previously had an eclamptic fit, give intravenous magnesium sulfate.

Consider giving intravenous magnesium sulfate to women with severe pre-eclampsia who are in a critical care setting if birth is planned within 24 hours.

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 and severe hypertension
- progressive deterioration in laboratory blood tests (such as rising creatinine or liver transaminases, or falling platelet count).

Use the Collaborative Eclampsia Trial regimen for administration of magnesium sulfate[1]:

- 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.

Do not use diazepam, phenytoin or other anticonvulsants as an alternative to magnesium sulfate in women with eclampsia.

[1] The MHRA has issued a warning about the risk of skeletal adverse effects in the neonate following prolonged or repeated use of magnesium sulfate in pregnancy. Maternal administration of magnesium sulfate for longer than 5-7 days in pregnancy has been associated with skeletal adverse effects and hypocalcaemia and hypermagnesemia in

neonates. If use of magnesium sulfate in pregnancy is prolonged or repeated, consider monitoring of neonates for abnormal calcium and magnesium levels and skeletal adverse effects.

4 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[1]
- intravenous hydralazine.

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.

Consider using up to 500 ml crystalloid fluid before or at the same time as the first dose of intravenous hydralazine in the antenatal period.

5 Corticosteroids

For fetal lung maturation

If early birth is considered likely within 7 days in women with pre-eclampsia [See page 10], offer a course of antenatal corticosteroids in line with the NICE Pathway on preterm labour and birth.

For HELLP syndrome

Do not use dexamethasone or betamethasone for the treatment of HELLP syndrome.

6 Fluid balance and volume expansion

Do not use volume expansion in women with severe pre-eclampsia [See page 10] unless hydralazine is the antenatal antihypertensive.

In women with severe pre-eclampsia, limit maintenance fluids to 80 ml/hour unless there are other ongoing fluid losses (for example, haemorrhage).

[1] At the time of publication (June 2019), some brands of nifedipine were specifically contraindicated during pregnancy by the manufacturer in its summary of product characteristics. Refer to the individual summaries of

product characteristics for each preparation of nifedipine for further details.

7 Mode of birth

Caesarean section versus induction of labour

Choose mode of birth for women with severe hypertension, severe pre-eclampsia [See page 10] or eclampsia according to the clinical circumstances and the woman's preference.

For more information, see the NICE Pathways on induction of labour and caesarean section.

8 Intrapartum care

Give advice and treatment to women with hypertensive disorders of pregnancy in line with the NICE Pathway on intrapartum care, unless there are recommendations in this guidance on the same topic. Offer care in accordance with the NICE Pathway on intrapartum care for women with hypertension whether treated or untreated, and not just on the basis of blood pressure in labour.

Blood pressure

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.

Continue use of antenatal antihypertensive treatment during labour.

Haematological and biochemical monitoring

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.

Care during epidural analgesia

Do not preload women who have severe pre-eclampsia [See page 10] with intravenous fluids before establishing low-dose epidural analgesia or combined spinal epidural analgesia.

Management of the second stage of labour

Do not routinely limit the duration of the second stage of labour in women with controlled hypertension.

Consider operative or assisted birth in the second stage of labour for women with severe hypertension whose hypertension has not responded to initial treatment.

9 See postnatal care and review in woman with chronic hypertension

See Hypertension in pregnancy / Chronic hypertension in pregnancy

10 See postnatal care and review in woman with gestational hypertension

See Hypertension in pregnancy / Gestational hypertension in pregnancy

11 See postnatal care and review in woman with pre-eclampsia

See Hypertension in pregnancy / Pre-eclampsia

Pre-eclampsia

New onset of hypertension (over 140 mmHg systolic or over 90 mmHg diastolic) after 20 weeks of pregnancy and the coexistence of 1 or more of the following new-onset conditions:

- proteinuria (urine protein:creatinine ratio over 30 mg/mmol or more, **or** albumin:creatinine ratio of 8 mg/mmol or more, **or** at least 1 g/litre [2+] on dipstick testing) **or**
- other maternal organ dysfunction:
  - renal insufficiency (creatinine 90 micromol/litre or more, 1.02 mg/100 ml or more)
  - liver involvement (elevated transaminases [ALT or AST over 40 IU/litre] with or without right upper quadrant or epigastric abdominal pain)
  - neurological complications such as eclampsia, altered mental status, blindness, stroke, clonus, severe headaches or persistent visual scotomata
  - haematological complications such as thrombocytopenia (platelet count below 150,000/microlitre), disseminated intravascular coagulation or haemolysis
- uteroplacental dysfunction such as fetal growth restriction, abnormal umbilical artery doppler waveform analysis, or stillbirth.

Severe pre-eclampsia

Pre-eclampsia with severe hypertension that does not respond to treatment or is associated with ongoing or recurring severe headaches, visual scotomata, nausea or vomiting, epigastric pain, oliguria and severe hypertension as well as progressive deterioration in laboratory blood tests such as rising creatinine or liver transaminases or falling platelet count, or failure of fetal growth or abnormal doppler findings.

Glossary

Eclampsia

(a convulsive condition associated with pre-eclampsia)

HELLP

(haemolysis, elevated liver enzymes and low platelet count)

Severe hypertension

(blood pressure over 160 mmHg systolic or over 110 mmHg diastolic)

Sources

Hypertension in pregnancy: diagnosis and management (2019) NICE guideline NG133

Your responsibility

Guidelines

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Technology appraisals

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, health professionals are expected to take these recommendations fully into account, alongside the individual needs, preferences and values of their patients. The application of the recommendations in this interactive flowchart is at the discretion of health professionals and

their individual patients and do not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Commissioners and/or providers have a responsibility to provide the funding required to enable the recommendations to be applied when individual health professionals and their patients wish to use it, in accordance with the NHS Constitution. They should do so in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Medical technologies guidance, diagnostics guidance and interventional procedures guidance

The recommendations in this interactive flowchart represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take these recommendations fully into account. However, the interactive flowchart does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Commissioners and/or providers have a responsibility to implement the recommendations, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this interactive flowchart should be interpreted in a way that would be inconsistent with compliance with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.