NICE National Institute for Health and Care Excellence

NICE Pathways

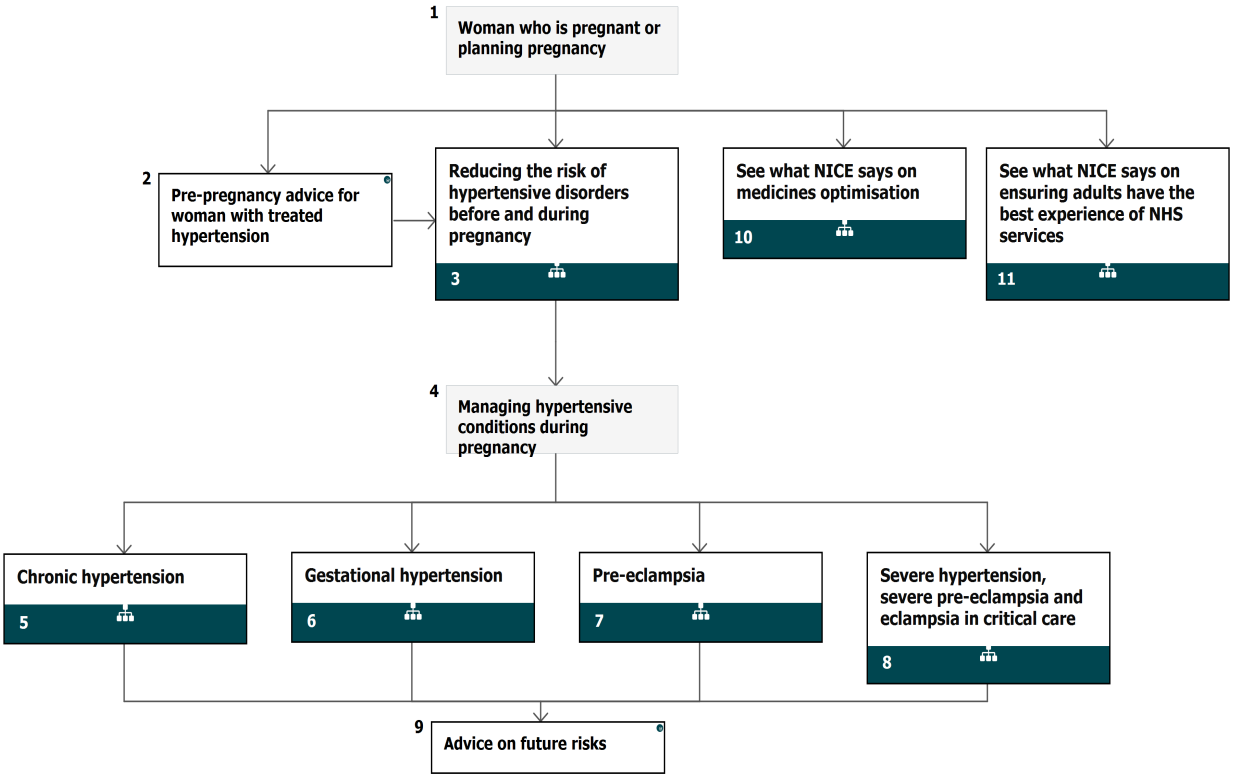
Hypertension in pregnancy overview

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: 23 July 2019

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



1 Woman who is pregnant or planning pregnancy

No additional information

2 Pre-pregnancy advice

Offer women with chronic hypertension referral to a specialist in hypertensive disorders of pregnancy to discuss the risks and benefits of treatment.

Advise women who take ACE inhibitors or ARBs[1]:

- 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.

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.

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.

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.

Quality standards

The following quality statement is relevant to this part of the interactive flowchart.

1. Pre-pregnancy advice for women with treated hypertension

[1] In 2014, the Medicines and Healthcare products Regulatory Agency (MHRA) issued a drug safety update on ACE

inhibitors and angiotensin II receptor antagonists: not for use in pregnancy, which states 'Use in women who are planning pregnancy should be avoided unless absolutely necessary, in which case the potential risks and benefits should be discussed'.

3 Reducing the risk of hypertensive disorders before and during pregnancy

See Hypertension in pregnancy / Reducing the risk of hypertensive disorders before and during pregnancy

4 Managing hypertensive conditions during pregnancy

No additional information

5 Chronic hypertension

See Hypertension in pregnancy / Chronic hypertension in pregnancy

6 Gestational hypertension

See Hypertension in pregnancy / Gestational hypertension in pregnancy

7 Pre-eclampsia

See Hypertension in pregnancy / Pre-eclampsia

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

See Hypertension in pregnancy / Severe hypertension, severe pre-eclampsia and eclampsia in critical care

9 Advice on future risks

Long-term risk of cardiovascular disease

Advise women who have had a hypertensive disorder of pregnancy that this is associated with an increased risk of hypertension and cardiovascular disease in later life (see the table on

cardiovascular risk [See page 9]).

Advise women who have had a hypertensive disorder of pregnancy to discuss how to reduce their risk of cardiovascular disease, including hypertensive disorders, with their GP or specialist. This may include:

- avoiding smoking, in line with NICE's recommendations on stop smoking interventions and services
- maintaining a healthy lifestyle, in line with NICE's recommendations on cardiovascular disease
- maintaining a healthy weight, in line with NICE's recommendations on obesity.

In women who have had pre-eclampsia [See page 8] or hypertension with early birth before 34 weeks, consider pre-pregnancy counselling to discuss possible risks of recurrent hypertensive disorders of pregnancy, and how to lower them for any future pregnancies.

See the NICE guideline to find out why we made these recommendations and how they might affect practice.

Long-term risk of end-stage kidney disease

Tell women with a history of pre-eclampsia who have no proteinuria and no hypertension at the postnatal review (6–8 weeks after the birth) that although the relative risk of end-stage kidney disease is increased, the absolute risk is low and no further follow-up is necessary.

Thrombophilia and the risk of pre-eclampsia

Do not routinely perform screening for thrombophilia in women who have had pre-eclampsia.

Risk of recurrence of hypertensive disorders of pregnancy

Advise women with hypertensive disorders of pregnancy that the overall risk of recurrence in future pregnancies is approximately 1 in 5 (see the table on likelihood of recurrence [See page 10]).

See the NICE guideline to find out why we made this recommendation and how it might affect practice.

Advise women who have had pre-eclampsia to achieve and keep a BMI within the healthy range before their next pregnancy (18.5–24.9 kg/m^2). See also NICE's recommendations on identifying and assessing people who are overweight or obese.

Advise women who have had pre-eclampsia that the likelihood of recurrence increases with an inter-pregnancy interval greater than 10 years.

Quality standards

The following quality statements are relevant to this part of the interactive flowchart.

7. Transfer of information about ongoing management

8. Communicating information about future risks

10 See what NICE says on medicines optimisation

See Medicines optimisation

11 See what NICE says on ensuring adults have the best experience of NHS services

See Patient experience in adult NHS services

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.

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.

Cardiovascular risk in women who have had a hypertensive disorder of pregnancy

	Type of hypertension in current or previous pregnancy			
Risk of future cardiovascular disease[a,b]	**Any hypertension in pregnancy**	**Pre-eclampsia**	**Gestational hypertension**	**Chronic hypertension**
Major adverse cardiovascular event	Risk increased (up to approximately 2 times)	Risk increased (approximately 1.5–3 times)	Risk increased (approximately 1.5–3 times)	Risk increased (approximately 1.7 times)
Cardiovascular mortality	Risk increased (up to approximately 2 times)	Risk increased (approximately 2 times)	(no data)	(no data)
Stroke	Risk increased (up to approximately 1.5 times)	Risk increased (approximately 2–3 times)	Risk may be increased	Risk increased (approximately 1.8 times)
Hypertension	Risk increased	Risk increased	Risk increased	(not

	(approximately 2–4 times)	(approximately 2–5 times)	(approximately 2–4 times)	applicable)

[a] Risks described are overall estimates, summarised from risk ratios, odds ratios and hazard ratios.

[b] Increased risk is compared to the background risk in women who did not have hypertensive disorders during pregnancy. Absolute risks are not reported, because these will vary considerably, depending on the follow-up time (range from 1 to 40 years postpartum).

Likelihood of recurrence of hypertensive disorders of pregnancy

	Type of hypertension in previous or current pregnancy		
Prevalence of hypertensive disorder in a future pregnancy	**Any hypertension in pregnancy**	**Pre-eclampsia**	**Gestational hypertension**
Any hypertension	Approximately 21% (1 in 5 women)	Approximately 20% (1 in 5 women)	Approximately 22% (1 in 5 women)
Pre-eclampsia	Approximately 14% (1 in 7 women)	Up to approximately 16% (1 in 6 women) If birth was at 28–34 weeks[a]: approximately 33% (1 in 3 women)	Approximately 7% (1 in 14 women)

		If birth was at 34–37 weeks: approximately 23% (1 in 4 women)	
Gestational hypertension	Approximately 9% (1 in 11 women)	Between approximately 6 and12% (up to 1 in 8 women)	Between approximately 11 and 15% (up to 1 in 7 women)
Chronic hypertension	Not applicable	Approximately 2% (up to 1 in 50 women)	Approximately 3% (up to 1 in 34 women)
[a] No evidence was identified for women who gave birth at less than 28 weeks, but the committee agreed that the risk was likely to be at least as high, if not higher, than that for women who gave birth between 28 and 34 weeks.			

Glossary

ACE inhibitors

angiotensin-converting enzyme inhibitors

ALT

alanine aminotransferase

ARBs

angiotensin II receptor blockers

AST

aspartate aminotransferase

BP

blood pressure

Chronic hypertension

(hypertension that is present at the booking visit, or before 20 weeks, or if the woman is already taking antihypertensive medication when referred to maternity services; it can be primary or secondary in aetiology)

CTG

cardiotocography

Eclampsia

(a convulsive condition associated with pre-eclampsia)

Gestational hypertension

(new hypertension presenting after 20 weeks of pregnancy without significant proteinuria)

HELLP

(haemolysis, elevated liver enzymes and low platelet count)

Hypertension

(blood pressure of 140 mmHg systolic or higher, or 90 mmHg diastolic or higher)

Multi-fetal

(a pregnancy with more than 1 baby, such as twins, triplets)

PIGF

placental growth factor

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.