This guideline covers the management of hypertensive disorders during pregnancy.

### Definition of terms
- **BP**: blood pressure
- **ACEI**: angiotensin-converting enzyme inhibitor
- **ARB**: angiotensin receptor blocker
- **iv**: intravenous
- **im**: intramuscular

### Reducing the risk – see full guideline
- Advise women with at least one high risk factor, or at least two moderate risk factors for pre-eclampsia (see full guideline) to take aspirin 75mg daily* from 12 weeks gestation until birth. High risk factors include the following:
  - chronic hypertension,
  - hypertensive disease during a previous pregnancy,
  - chronic kidney disease,
  - autoimmune disease,
  - type 1 or type 2 diabetes.
- **Do NOT** use any of the following solely to prevent hypertensive disorders in pregnancy:
  - nitric oxide agents (e.g. L-arginine), progesterone, diuretics, low molecular weight heparin, magnesium, folic acid, antioxidants, fish oils, garlic.
- **Do NOT** advise restricting salt intake.

* Unlicensed indication – obtain and document informed consent.

### Antenatal care
- **Stop ACEIs and ARBs** within 2 days of notification of pregnancy and offer alternatives based on pre-existing treatment, side-effect profile and teratogenicity.
- **Aim for BP < 150/100 mmHg.**
- **If target organ damage, aim for BP < 140/90 mmHg.**
- **Do not offer treatment to lower diastolic BP to < 80 mmHg.**
- **For women with secondary chronic hypertension** offer referral to a specialist.

### Assessment of proteinuria – see full guideline

### Chronic hypertension - antihypertensive treatment

- **Counselling before pregnancy**
  - Tell women planning a pregnancy to discuss their antihypertensive treatment with the healthcare professional responsible for managing their hypertension.
  - Tell women that the risk of congenital abnormalities is:
    - increased with ACEIs or ARBs,
    - not increased with other antihypertensive treatments, based on limited evidence.

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### Gestational hypertension
- **Antenatal care** - carry out a full assessment in secondary care.

### Pre-eclampsia
- **Antenatal care** - assess at each consultation.

For women with gestational hypertension or pre-eclampsia offer an integrated package of care covering assessment, treatment and monitoring. See Table 1 and full guideline.

### Fetal monitoring – see full guideline

### Timing of birth – see full guideline

§ **Editorial note** – prescribers need to be aware of the contraindications and special warnings in the SPCs for individual products as these often differ from accepted obstetric practice. Obtain and document informed consent.

### Definitions of hypertension
- **Chronic** – primary or secondary hypertension being treated at time of referral, present at booking visit or before 20 weeks.
- **Gestational** – new hypertension presenting after 20 weeks without significant proteinuria.
- **Pre-eclampsia** – new hypertension presenting after 20 weeks with significant proteinuria.
- **Eclampsia** – convulsive condition associated with pre-eclampsia.

### Table 1: Treatment and management of hypertensive disorders in pregnancy. Use in conjunction with treatment algorithms in full guideline

<table>
<thead>
<tr>
<th></th>
<th>Mild hypertension BP 140/90 - 149/99 mmHg</th>
<th>Moderate hypertension BP 150/100 - 159/109 mmHg</th>
<th>Severe hypertension BP ≥ 160/110 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gestational hypertension</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admit to hospital</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Treat</td>
<td>No</td>
<td><strong>First-line – labetalol (oral)</strong>*</td>
<td><strong>First-line – labetalol (oral)</strong>*</td>
</tr>
<tr>
<td>Measure BP</td>
<td>Not more than once a week</td>
<td>At least twice a week</td>
<td>At least 4 times a day</td>
</tr>
<tr>
<td><strong>Pre-eclampsia</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admit to hospital</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Treat</td>
<td>No</td>
<td><strong>First-line – labetalol (oral)</strong>*</td>
<td><strong>First-line – labetalol (oral)</strong>*</td>
</tr>
<tr>
<td>Measure BP</td>
<td>At least 4 times a day</td>
<td>At least 4 times a day</td>
<td>More than 4 times a day depending on clinical circumstances</td>
</tr>
</tbody>
</table>

* to keep diastolic BP between 80 to 100 mmHg, and systolic BP <150 mmHg  
** Informed consent should be obtained and documented
IV fluids – severe pre-eclampsia

- If birth likely within 7 days in a woman with pre-eclampsia:
  - Corticosteroids
  - Give iv magnesium sulphate** if a woman with severe pre-eclampsia and eclampsia in critical care
  - Use nifedipine* (oral) or labetalol*(oral or iv)
  - Measure BP hourly.
  - Continue antenatal antihypertensive treatment.
  - Do not routinely limit duration of second stage of labour if BP stable.
  - Measure BP continually.
  - Continue antenatal antihypertensive treatment.
  - If BP controlled within target range do not routinely limit duration of second stage of labour.
  - If BP does not respond to initial treatment advise operative birth.

Criteria for referral to critical care – see full guideline

Use in conjunction with treatment algorithms in full guideline

Intrapartum care – all hypertensive disorders in pregnancy

<table>
<thead>
<tr>
<th>Mild to moderate hypertension</th>
<th>Severe hypertension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure BP hourly.</td>
<td>Measure BP continually.</td>
</tr>
<tr>
<td>Do not routinely limit duration of second stage of labour if BP stable.</td>
<td>If BP controlled within target range do not routinely limit duration of second stage of labour.</td>
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<tr>
<td></td>
<td>If BP does not respond to initial treatment advise operative birth.</td>
</tr>
</tbody>
</table>

Treatment and management of severe hypertension, severe pre-eclampsia and eclampsia in critical care

- Criteria for referral to critical care – see full guideline

Pre-eclampsia

- Give iv magnesium sulphate** if a woman with severe hypertension or severe pre-eclampsia has or previously had an eclamptic fit.
- Consider giving iv magnesium sulphate** if birth planned within 24 hours in a woman with severe pre-eclampsia.
- Use the following dosage regimen for magnesium sulphate**,
  - iv loading dose 4g over 5 minutes, followed by iv infusion of 1g per hour for 24 hours.
  - if recurrent seizures, give a further dose of 2 to 4g over 5 minutes.
- Do NOT use diazepam or phenytoin in women with eclampsia.

Postnatal care

Chronic and gestational hypertension

- Continue antenatal or pre-pregnancy antihypertensive treatment if appropriate.
- If methyldopa was used during pregnancy stop within 2 days of birth.
- Start antihypertensive treatment if BP ≥150/100 mmHg and no previous treatment.
- Measure BP:
  - daily for first 2 days after birth,
  - at least once 3 to 5 days after birth,
  - then as clinically indicated.
- Chronic hypertension; aim to keep BP < 140/90 mmHg.
- Gestational hypertension; if BP fails to:
  - < 140/90 mmHg, consider reducing antihypertensive treatment,
  - < 130/80 mmHg, reduce antihypertensive treatment.

Pre-eclampsia – see full guideline for post-natal care.

Breastfeeding

- Offer advice and information about the safety of drugs for babies receiving breast milk.
- Avoid diuretic treatment for hypertension.
- Do NOT give the following antihypertensives as there is insufficient evidence of safety in babies receiving breast milk:
  - ARBs
  - ACEIs – except enalapril and captopril
  - amlodipine

Drugs considered SAFE to take whilst breastfeeding

- captopril
- labetalol
- enalapril
- metoprolol
- nifedipine
- atenolol

§§ Editorial note – most sources consider that atenolol is not a first-line choice in breastfeeding due to concerns about potential toxicity. Exposed infants should be monitored.

Follow-up care – see full guideline

- At transfer to community care, write a care plan that includes;
  - who will provide follow-up care,
  - frequency of BP monitoring,
  - thresholds for reducing or stopping antihypertensive treatment,
  - criteria for referral,
  - self-monitoring for symptoms.
- Offer medical review with pre-pregnancy care team at 6 to 8 week postnatal review.

Counselling after birth

- Tell women who have had gestational hypertension or pre-eclampsia that they have an increased risk of these conditions occurring in future pregnancies and an increased risk of developing high BP and its complications in later life.

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The NICE Bites User survey is ongoing please click here to complete or go to http://tinyurl.com/nicebites

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