- **Antenatally unclassifiable hypertension:** BP is first recorded after 20 weeks of gestation, and hypertension is diagnosed but it is unclear if chronic or not; reassessment is necessary 6 weeks post-partum.
- **Pre-eclampsia:** gestational hypertension accompanied by new-onset: (i) proteinuria (>0.3 g/day or ≥30 mg/mmol ACR), (ii) other maternal organ dysfunction, including acute kidney injury (serum creatinine ≥ 1 mg/dL), liver dysfunction (elevated transaminases > 40 UI/L with or without right upper quadrant or epigastric abdominal pain), neurological complications (convulsions, altered mental status, blindness, stroke, severe headaches, and persistent visual scotomata), or haematological complications (platelet count < 150 000/μL, disseminated intravascular coagulation, haemolysis), or (iii) uteroplacental dysfunction (such as foetal growth restriction, abnormal umbilical artery Doppler waveform analysis, or stillbirth).[643] The only cure for pre-eclampsia is delivery, which is recommended at 37 weeks' gestation, or earlier in high-risk cases. Of note, proteinuria is not mandatory for diagnosing pre-eclampsia but is present in about 70% of cases.[644] Also, as proteinuria may be a late manifestation of pre-eclampsia, it should be suspected when *de novo* hypertension is accompanied by headache, visual disturbances, abdominal pain, or abnormal laboratory tests, specifically low platelets and/or abnormal liver function.

Other potential causes for high BP, including pain and anxiety, must be excluded when treating hypertension during pregnancy.

9.2.3. Measuring blood pressure in pregnancy

See *Section 5.5.1* for information on BP measurement approaches in pregnancy.[645] It is important to restate here that oscillometric devices tend to under-estimate the true BP and are unreliable in severe pre-eclampsia; only a few have been validated in pregnancy. Importantly, only the relatively few devices validated for measuring BP in pregnancy and pre-eclampsia should be used (https://stridebp.org).

9.2.4. Investigating hypertension in pregnancy

Basic laboratory investigations include urinalysis, blood count, haematocrit, liver enzymes, serum creatinine, and serum uric acid. Serum uric acid is increased in pre-eclampsia and identifies women at increased risk of adverse maternal and foetal outcomes in hypertensive pregnancies.[646]

All pregnant women should be assessed for proteinuria in early pregnancy (e.g. 11–14 weeks' gestation).[647] A dipstick test of ≥1+ should prompt further investigations, including ACR, which can be quickly determined in a single spot-urine sample.[648] An ACR of <30 mg/mmol (<0.3 mg/mg) can rule out proteinuria.[649] Higher values should prompt 24 h urine collection.

In one study, 10% of pregnant women with chronic hypertension had secondary hypertension (estimated to affect 0.24% of all pregnancies).[650] Secondary hypertension during pregnancy is associated with an increased risk of adverse outcomes.[650] The most common cause of secondary hypertension during pregnancy is CKD. The onset of hypertension during the first trimester, at the peak of human chorionic gonadotropin (HCG) secretion, should prompt consideration of primary aldosteronism.[651] Phaeochromocytoma in pregnant women is rare (0.002% of all pregnancies) but highly morbid.[652,653]

9.2.5. Preventing hypertension and pre-eclampsia

Low-to-moderate-intensity exercise, especially if supervised and initiated during the first trimester of pregnancy, decreases the incidence of developing gestational hypertension.[654] As such, after consultation with their obstetrician, all pregnant women should participate in physical activity, unless contraindicated.[655] Factors indicating risk of pre-eclampsia are discussed in the Supplementary data online.

Women at high or moderate risk of pre-eclampsia should be advised to take 100–150 mg of aspirin daily at bedtime from gestational weeks 12–36.[647,656,657]

Oral calcium supplementation of 0.5–2 g daily is recommended for preventing pre-eclampsia in women with low dietary intake of calcium (<600 mg daily).[658,659]

9.2.6. Treatment initiation and blood pressure targets

Acute management of BP in pre-eclampsia and eclampsia is detailed in *Section 10.4*.

Meta-analyses have found no evidence for an increased risk for delivering small-for-gestational-age babies in pregnant women with mild hypertension receiving BP-lowering medications.[660] Despite a historical paucity of trial data, previous European guidelines[1,89] recommended initiating BP-lowering drug treatment (i) in all women with persistently elevated office BP of ≥150/90 mmHg, and (ii) in women with gestational hypertension (with or without proteinuria), pre-existing hypertension with superimposed gestational hypertension, or hypertension with subclinical HMOD, when office BP is >140/90 mmHg.

In the CHAP trial, treating pregnant women with chronic hypertension and BP of ≥140/90 mmHg reduced the occurrence of pre-eclampsia with severe features, and reduced medically indicated pre-term birth <35 weeks, compared with only treating severe hypertension (BP ≥ 160/105 mmHg).[88] Tight BP control (target diastolic BP < 85 mmHg) compared with less-tight BP control (target diastolic BP < 100 mmHg) reduces the incidence of subsequent severe maternal hypertension (BP ≥ 160/110 mmHg), but not foetal or other maternal outcomes in women with mild hypertension at baseline (diastolic BP of 85–105 mmHg).[661]

Treatment with BP-lowering drugs in all pregnant women with confirmed BP of ≥140/90 mmHg is recommended to reduce the progression to severe hypertension and the related risks for adverse pregnancy outcomes.[660,661] In women with pre-existing and gestational hypertension with and without pre-eclampsia, we recommend lowering BP below 140 mmHg for systolic and to 80–90 mmHg for diastolic BP.[661] Evidence to support a BP target as low as 120–129/70–79 mmHg is lacking in pregnancy, though such evidence exists for non-pregnant patients receiving BP-lowering medication.

9.2.7. Managing mild hypertension in pregnancy (office blood pressure 140–159/90–109 mmHg)

RAS inhibitors are not recommended in pregnancy due to adverse foetal and neonatal outcomes. The BP-lowering drugs of choice are: beta-blockers (most data are available for labetalol, a non-selective beta-blocker that also acts as an alpha-blocker in higher doses; metoprolol and bisoprolol are also considered safe), dihydropyridine CCBs (most data are available for nifedipine, which is generally considered first choice, also felodipine, nitrendipine, amlodipine, and isradipine can be used), and methyldopa.[662,663] A meta-analysis suggests that beta-blockers and CCBs are more effective than methyldopa in preventing severe hypertension.[660] Of note, however, atenolol should be avoided, as it is associated with foetal growth restriction.[664,665] Methyldopa has been associated with an increased risk of post-partum depression and caution is therefore advised both intra-partum and post-partum.[637]