The foetus is at high risk of IUGR prematurity, and intrauterine death (25%, 27%, and 4%, respectively, in cases of pre-eclampsia).[589]

12.3.1. Definition and classification of hypertension in pregnancy

Hypertension in pregnancy is typically defined as systolic blood pressure (BP) of ≥140 mmHg and/or diastolic BP of ≥90 mmHg,[585] measured using repeated BP readings in the office or hospital on two separate occasions or ≥15 min apart in severe hypertension (≥160/110 mmHg).[584,590]

12.3.1.1. Pre-eclampsia/eclampsia

Pre-eclampsia is defined as gestational hypertension complicated by new onset of the laboratory or clinical changes reported in *Table 14* at or after 20 weeks. Eclampsia is defined as the new onset of seizures or coma in a pregnant woman with pre-eclampsia.[584,585]

The combination of haemolysis, thrombocytopenia, and elevated transaminases defines HELLP syndrome, which is usually considered to be a variant of pre-eclampsia.[43] Risk factors for pre-eclampsia are described in *Table 15*.

Table 15 Risk factors for pre-eclampsia

High risk factors for pre-eclampsia
Hypertensive disorders during a previous pregnancy
Chronic hypertension
Chronic kidney disease
Type 1 or type 2 diabetes mellitus
Autoimmune diseases such as systemic lupus erythematosus or antiphospholipid syndrome
Assisted reproductive therapy in the current pregnancy
Moderate risk factors for pre-eclampsia
Nulliparity
Age ≥40 years
Pregnancy interval of more than 10 years
BMI ≥35 kg/m^2 at the first visit
Family history of pre-eclampsia
Multi-foetal pregnancy

Based on Mancia *et al.*[584] and McEvoy *et al.*[585]
BMI, body mass index.

12.3.2. Diagnosis and risk assessment

12.3.2.1. Blood pressure measurement

Maternal BP should be assessed at each encounter and should be measured in the sitting position (or the left lateral recumbent position during labour) with an appropriately sized arm cuff at heart level and using Korotkoff V for diastolic BP. Mercury sphygmomanometers remain the gold standard for BP measurement in pregnancy as automatic devices tend to under-record BP and are unreliable in severe pre-eclampsia. Only automatic devices specifically validated for pregnancy should be used.[584,591]

The diagnosis of hypertension in pregnancy by ambulatory BP monitoring is superior to office BP measurements or home BP monitoring for the prediction of pregnancy outcomes.[584,592] Ambulatory BP monitoring avoids unnecessary treatment of white-coat hypertension, and is useful in the management of high-risk pregnant women with hypertension and those with diabetic or hypertensive nephropathy.[593,594] Either home BP monitoring or office BP measurements may be used alternatively or complementarily to diagnose hypertensive disorders during pregnancy in women at risk of pre-eclampsia.

However, among pregnant women with pre-existing or gestational hypertension, home BP monitoring is not associated with better BP control compared with scheduled office BP measurements.[584,595,596] Either can be used for BP monitoring.[595,596]

12.3.2.2. Laboratory tests

Basic laboratory investigations recommended for monitoring hypertensive disorders of pregnancy include urinalysis, blood count, haematocrit, liver enzymes, serum creatinine, and serum uric acid. All pregnant women should be assessed for proteinuria in early pregnancy to detect pre-existing renal disease and, in the second half of pregnancy, to screen for pre-eclampsia.[43]

In addition to basic laboratory tests, the following investigations may be considered:

- Ultrasound of the adrenals, and plasma and urinary fractionated metanephrine assays.
- Doppler ultrasound of uterine arteries (after 20 weeks of gestation).[597]
- A ratio of soluble fms-like tyrosine kinase-1 (sFlt-1) to placental growth factor (PlGF) of <38 can be used to reliably exclude the development of pre-eclampsia over the next 7 days when clinically suspected.[43,598]

If women with chronic hypertension are suspected of developing pre-eclampsia, testing for PlGF may help rule out pre-eclampsia between 20 and 36 weeks.[599,600]

12.3.3. Management of hypertension in pregnancy

Management of hypertension in pregnancy depends on the woman's BP and gestational age, and the presence of associated maternal and foetal risk factors.[601,602] In pregnant women with BP >160/110 mmHg, hospital admission is recommended[603] (*Figure 12A*). If BP is ≥140–159/90–99 mmHg, BP control is mandatory with a BP target of <140/90 mmHg.

In two large trials,[583,604] tight diastolic BP control (<85–90 mmHg) in women with pre-existing hypertension was superior to less tight diastolic BP control (<100–105 mmHg) and caused no harm.

In pregnant women with diagnosed hypertension, blood tests, clinical examination, and assessment of proteinuria are mandatory and should be repeated regularly.[599] If a urine dipstick is positive or borderline for proteinuria, and symptoms and laboratory tests (including biomarker assessment) are indicative of pre-eclampsia, the diagnosis of pre-eclampsia can be made and hospital admission is recommended where there are clinical concerns.[599]

12.3.3.1. Non-pharmacological management

Pregnant women with hypertension should be advised to follow a healthy lifestyle including physical activity, smoking cessation, a healthy diet, and control of body weight. Lifestyle changes before and during pregnancy may ameliorate both maternal and foetal risks.[605] Salt restriction is not advised to reduce hypertensive disorders during pregnancy, but it is reasonable for women with pre-existing hypertension to continue with a low sodium diet.[584] Unless contraindicated, aerobic exercise should be recommended in pregnant women with hypertension to maintain ideal body weight and reduce adverse pregnancy