



Pre-eclampsia

Pre-eclampsia, also known as “toxaemia of pregnancy”, is a complication of pregnancy characterised by the development of elevated blood pressure and high protein levels in the urine. It affects about two out of 100 pregnant women. Pre-eclampsia usually occurs beyond 20 weeks of pregnancy. One of the main features of pre-eclampsia is a reduced blood flow from the mother to the placenta, resulting in an insufficient supply of oxygen and nutrients to the baby. The condition may be associated with severe short- and long-term effects for both, mother and her baby.

Causes and risk factors for pre-eclampsia¹

Pregnancy history

- First pregnancy
- Multiple pregnancy
- Assisted reproduction (in vitro fertilisation, egg donation)
- Family or own history of pre-eclampsia (or intrauterine growth restriction, placental abruption)

- Obesity (Body Mass Index ≥ 30)
- Chronic diseases (for example elevated blood pressure, kidney diseases or diabetes)
- Autoimmune diseases (for example antiphospholipid syndrome, systemic lupus erythematoses)

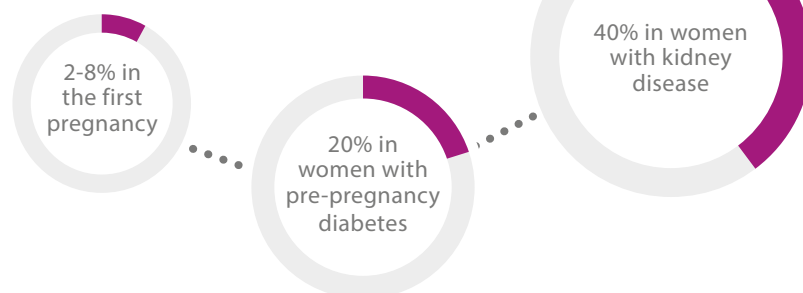
Medical conditions

Demographic factors

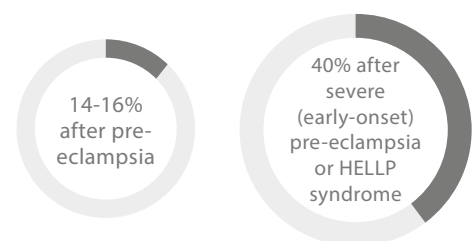
- Age < 18 years or > 40 years
- Ethnicity (black women)

Numbers at a glance^{1,2}

What is the risk for pre-eclampsia?



What is the risk of developing pre-eclampsia again in a future pregnancy?



Symptoms of pre-eclampsia

First symptoms of pre-eclampsia such as elevated blood pressure and an increased amount of proteins in the urine become visible in mid pregnancy. Most pregnant women with the condition feel fine at the beginning. That is one of the reasons why every woman should attend the prenatal check with the healthcare professional in the first trimester to identify her risk for pre-eclampsia as early as possible to enable early prophylaxis. Leading symptoms of pre-eclampsia which are mostly not noticed by the pregnant women themselves, therefore need to be diagnosed by a healthcare professional²:

- A sudden elevation in blood pressure $\geq 140/90$ mmHg (to compare: an optimal blood pressure has a value of about 120/80 mmHg).
AND
- More than 300 mg protein in the urine collected over a period of 24 hours (to compare: normally, protein to a maximum of 150 mg of protein is excreted with the urine over a period of 24 hours).
- Alternatively, proteinuria is diagnosed based on a protein-creatinine ratio ≥ 30 mg/mmol. A dipstick measurement of 1+ is highly suspicious for proteinuria and has to be further evaluated.

If the condition worsens, various other warning symptoms may develop. Every pregnant woman shall be sensitively informed about the following symptoms which definitely require a check by the responsible healthcare professional:

- Severe or rapid swellings of the legs and other parts of the body caused by excess fluid trapped in tissues (edema)
- Puffiness of face and hands
- Severe headache
- Severe heartburn
- Sudden nausea and vomiting
- Upper right abdominal pain or stomach pain and/or shoulder pain
- Rapid weight gain, in particular in the third trimester (more than 2 pounds/1 kg per week)
- Sensations of flashing lights, auras, light sensitivity, or blurry vision or spots
- Shortness of breath

Complications of pre-eclampsia¹

Pre-eclampsia is a progressive disorder and after the initial symptoms in about 20% of women complications can occur. These complications include:



- Placental abruption
- Organ damage (kidneys, liver, lungs, heart)
- Haemostatic disorders and major haemorrhage
- Stroke or cerebral bleeding
- Seizures (eclampsia)
- Death
- Higher risk of cardiovascular disease in later life



- Low birth weight
- Preterm birth
- Death
- Higher risk of cardiovascular disease in later life

A timely diagnosis of pre-eclampsia is vital to avoid serious consequences for the mother and her baby.

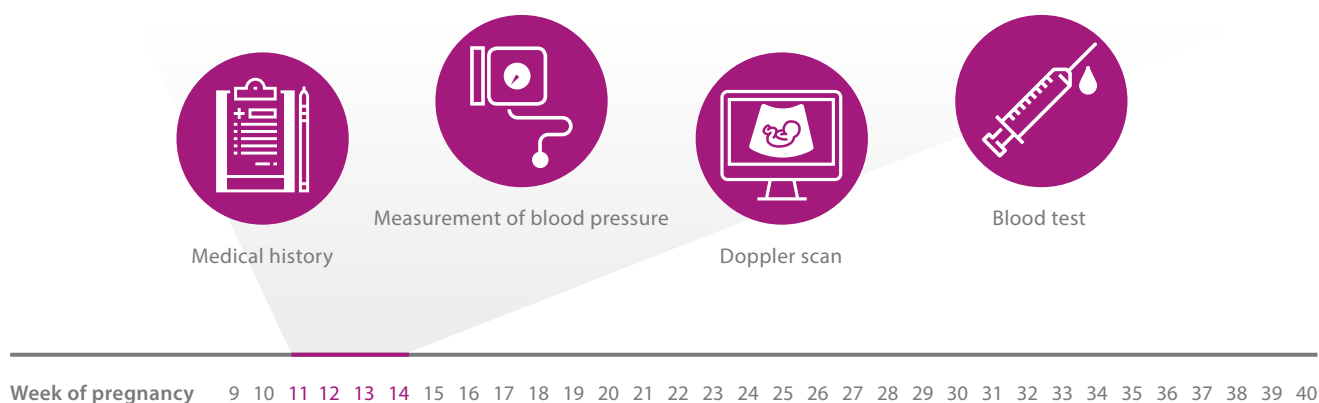
A complication of pre-eclampsia: HELLP syndrome

The **HELLP** syndrome is considered as a complication of pre-eclampsia. „HELLP“ is an abbreviation of the three main symptoms of this syndrome: **H**aemolysis, **E**levated **L**iver enzymes, and **L**ow **P**latelet count. The syndrome may be associated with serious liver manifestations, including infarction, haemorrhage and rupture.

Screening for pre-eclampsia in the first trimester

An early pre-eclampsia screening is feasible between week 11 and 14 of pregnancy before first clinical symptoms are seen. Usually, in this period, the first routine visit with the healthcare professional is scheduled. The screening test involves medical history, measurement of blood pressure, a special Doppler scan to analyse the blood flow through the uterine arteries, and a blood test to identify two specific proteins (PAPP-A, PIGF).³ Identifying women with a high risk of pre-eclampsia development so early is key to advise for preventive measures.

Screening test



Prevention of pre-eclampsia

Studies show that for women who are at increased risk of developing pre-eclampsia the only possible and proven form of prevention is the regular intake of low-dose aspirin prescribed by a doctor before week 16 of pregnancy.⁴ Recent evidence states that in high-risk women, the occurrence of pre-eclampsia before week 37 can be reduced by more than 60% and before week 34 by 82% by the intake of 150 mg aspirin per day.⁵

Diagnosis of pre-eclampsia after week 20 of pregnancy

Because the risk factors for pre-eclampsia are so broad, healthcare professionals test every pregnant woman by measuring blood pressure and checking the urine for protein, usually at every prenatal appointment. Women at risk or with elevated blood pressure usually are asked to control their blood pressure by self-measurement. To check for protein in the urine, a special urine dipstick is used. Once a certain level is exceeded, further evaluation is indicated. Newer studies show that by determining the ratio of two placental proteins (sFlt-1/PlGF) pre-eclampsia can be predicted about four weeks before onset of the disease.⁶

The earlier pre-eclampsia is diagnosed, the sooner it is possible to refer pregnant women to specialised perinatal care centres equipped for eventualities.

Treatment of pre-eclampsia

The only way to cure pre-eclampsia and its consequences is to remove the placenta and therefore to deliver the baby. This will normally be at around 37-38 weeks of pregnancy. Time and mode of delivery depend on the severity of the disorder (for example maternal and foetal compromise). In early-onset pre-eclampsia, prolongation of pregnancy in order to diminish the problems of preterm birth is feasible. Until the baby is born, the pregnant woman is monitored and receives anti-hypertensive medication. Labour may be induced or a caesarean section is conducted.

In brief

- Pre-eclampsia is a serious pregnancy complication characterised by high blood pressure and elevated protein level in the urine, occurring in mid pregnancy.
- Pre-eclampsia initially has no obvious symptoms and most pregnant women with the condition do not feel sick.
- In pregnancy weeks 11-14 it is possible to identify women at high risk for pre-eclampsia by a screening test carried out by a specialist.
- High-risk patients can be monitored closely and the doctor can prescribe low-dose aspirin before week 16 of pregnancy in order to reduce the risk of getting pre-eclampsia.
- Women who are diagnosed with pre-eclampsia will be monitored closely in order to avoid severe complications.
- The only way to cure pre-eclampsia and its consequences is to remove the placenta and therefore to deliver the baby.

About EFCNI

The European Foundation for the Care of Newborn Infants (EFCNI) is the first pan-European organisation and network to represent the interests of preterm and newborn infants and their families. It gathers together parents, healthcare experts from different disciplines, and scientists with the common goal of improving long-term health of preterm and newborn children by ensuring the best possible prevention, treatment, care, and support.

For more information, visit us at www.efcni.org

Special thanks to Dr Dietmar Schlembach (Germany) and Dr Stefan Verlohren (Germany) for their support and advice.

The factsheet "pre-eclampsia" is kindly supported by Thermo Fisher Scientific.

References:

1. Arulkumaran N et al. Best Pract Res Clin Obstet Gynaecol. 2013 Dec; 27(6): 877-84
2. DGGG. Geburtsh Frauenheilk. 2015; 75: 900-914
3. O'Gorman N et al. Ultrasound Obstet Gynecol. 2017 Jun; 49(6): 751-755
4. Bujold E et al. Obstet Gynecol. 2010 Aug; 116(2): 402-14
5. Rolnik DL et al. N Engl J Med. 2017 Aug; 377(7): 613-622
6. Zeisler H et al. N Engl J Med. 2016 Jan; 374(1):13-22

© 10/2017 EFCNI. All rights reserved.

The content presented here is for information only. It is not a substitute for professional medical advice, and it should not be used to diagnose or treat a health problem or disease.