



## Patient Information

Attachment to Chapter 28 (Hypertensive Pregnancy Complications and Eclampsia 2014) of the obstetric guidelines, published by the Norwegian Gynaecological Association.

## WHAT IS PREECLAMPSIA?

Preeclampsia is a complication exclusive to pregnancy. It is defined by new onset, persistently elevated blood pressure during pregnancy (i.e. a systolic blood pressure of at least 140mm Hg or a diastolic blood pressure of at least 90mm Hg) and protein in the urine (proteinuria), both occurring after pregnancy week 20. The condition is called pregnancy induced hypertension if there is new onset hypertension without proteinuria. Some women have high blood pressure before pregnancy week 20. This is called chronic hypertension. Preeclampsia, pregnancy induced hypertension, and chronic hypertension in pregnancy, are together referred to as “hypertensive complications of pregnancy”.

## HOW COMMON IS PREECLAMPSIA?

Preeclampsia affects 3-4% of all pregnant women. All together 10% of pregnant women are affected by a hypertensive complication of pregnancy.

## IS PREECLAMPSIA DANGEROUS?

Preeclampsia usually occurs late in pregnancy with few or no symptoms. In high-income countries about 1/100 women with preeclampsia develop a more serious degree of disease with complications such as eclampsia (fits), cerebral hemorrhage (bleeding in the brain), kidney failure, liver damage and serious problems with the blood clotting system («disseminated intravascular coagulation»). In Norway, death of a mother or child due to preeclampsia only occurs in extreme and rare cases. Deaths and serious morbidity are more common in low-income countries with limited access to antenatal care and health care during and after labour.

## WHICH SYMPTOMS ARE ASSOCIATED WITH PREECLAMPSIA?

The pregnant woman usually has no symptoms at the onset of preeclampsia. It is therefore important that she attends regular antenatal check-ups to detect elevated blood pressure or proteinuria. Women with preeclampsia may eventually develop symptoms including visual disturbances (typically flickering), headache, nausea, upper abdominal pain, swelling of the feet, hands and face, and malaise. Some pregnant women with preeclampsia and placental insufficiency also feel less fetal movement. Most of these symptoms can occur in a normal pregnancy, but if they are new to the woman or if several of the symptoms appear simultaneously, health care personnel should always be consulted. If a woman experiences reduced fetal movement after pregnancy week 20, the obstetric clinic should be called for further counsel.

## WHAT IS THE CAUSE OF PREECLAMPSIA?

The cause of preeclampsia is unknown. However, it is known that the cause is linked to placental function. It is believed that substances from the placenta are transferred to the circulation of the pregnant woman and affect her vessel walls, causing elevated blood pressure and leakage of protein through the vessel walls of the kidney (resulting in proteinuria). If preeclampsia develops in early pregnancy, placental insufficiency is often severe and causes insufficient growth of the fetus.

## HOW IS PREECLAMPSIA TREATED?

As of today, the only definitive treatment of preeclampsia is to remove the placenta, which means that the baby and the placenta must be delivered. Determining optimal timing of delivery can be difficult, as maternal health must be balanced against risks to the fetus. This is especially relevant before term as immature fetal lungs may present a problem. In preeclampsia, placental function is often impaired and in some cases, it is better for the child to be delivered than to remain in the womb. Vaginal delivery might be induced or a caesarean section might be performed. Choice of delivery method depends on maternal and fetal health, pregnancy length, maturity of the cervix, and whether or not the woman has previously delivered vaginally. In order to prevent complications, such as cerebral hemorrhage in the woman, some women with serious preeclampsia receive antihypertensive medication and intravenous magnesium sulphate. This treatment lowers the risk of complications, but the patient is not cured of preeclampsia by the use of these medications.

## WHO IS AFFECTED BY PREECLAMPSIA?

As of today, we cannot exactly predict all cases of preeclampsia. However, we know that the following women are at an increased risk of developing the condition:

- Primiparous women
- Women who had preeclampsia in one or more previous pregnancies
- Women bearing more than one child (e.g. twins, triplets)
- Women who have diabetes mellitus (pre-existing or arising in pregnancy)
- Women who have elevated blood pressure or chronic kidney disease before pregnancy
- Overweight women
- Women more than 40 years old
- Women with certain rare autoimmune diseases (e.g. systemic lupus erythematosus and antiphospholipid syndrome)
- Women whose last childbirth was more than 10 years ago

Even if a woman has one or more of the risk factors listed above, she will most likely have a pregnancy without preeclampsia. In general, preeclampsia is not inheritable, but if several close relatives have had preeclampsia the risk is somewhat increased.

## CAN PREECLAMPSIA BE PREVENTED IN PREGNANCY?

The only definitive way of preventing preeclampsia is to avoid pregnancy altogether. For most women, this is not an option; not if they are healthy, nor if they had preeclampsia in a previous pregnancy. A normal, healthy lifestyle before and during pregnancy with adequate physical activity, a healthy diet, and normal body weight is generally recommended. There is no evidence to recommend a special diet during pregnancy.

Some pregnant women, as those who previously have experienced serious preeclampsia, are in the next pregnancy treated with a low dose of acetylsalicylic acid (aspirin) to lower the risk of recurrent preeclampsia ([Obstetric guidelines – 2014, Norwegian Gynaecological Association](#)). In women with chronic disease, it is desirable to treat these diseases optimally before and during pregnancy. Reducing overweight before pregnancy will probably reduce the risk of preeclampsia.

## WHAT ARE THE LONG-TERM EFFECTS OF PREECLAMPSIA?

In most women, blood pressure normalizes within days after delivery. Some have to use antihypertensive medication for some time after giving birth, while a few have to stay on life-long therapy. Women who had very severe preeclampsia may in rare cases have sequelae from their complications. Babies delivered in Norway are mostly healthy, but in cases where babies are born very prematurely, the premature delivery in itself may cause health problems of varying severity.

The babies, as well as the woman herself, have a somewhat increased risk of developing cardiovascular disease later in life after a pregnancy complicated by preeclampsia. For the time being, there are no quality-assured guidelines in Norway and in most other countries, as to how women should be followed up after preeclampsia in order to prevent and detect cardiovascular disease.

## PROPOSED FOLLOW-UP OF CARDIOVASCULAR HEALTH AFTER PREECLAMPSIA

«A National Clinical Guideline for Individual Primary Prevention of Cardiovascular Disease» ([Nasjonal faglig retningslinje for individuell primærforebygging av hjerte- og karsykdommer, Helsedirektoratet, 2009](#)) does not mention pregnancy complications as cause for implementing measures to prevent cardiovascular disease in affected women. However, recent research shows that some pregnancy complications (e.g. preeclampsia and gestational diabetes) are risk factors for cardiovascular disease of the same magnitude as smoking, obesity and metabolic syndrome.

Please also see international guidelines:

- Mosca et al. Effectiveness-based guidelines for the prevention of cardiovascular disease in women--2011 update: a guideline from the American Heart Association. *J Am Coll Cardiol* 2011.
- **Staff** AC, Redman CW, Williams D, Leeson P, **Moe** K, Thilaganathan B, Magnus P, Steegers EA, Tsigas EZ, Ness RB, Myatt L, Poston L, Roberts JM; Global Pregnancy Collaboration (CoLab). [Pregnancy and Long-Term Maternal Cardiovascular Health: Progress Through Harmonization of Research Cohorts and Biobanks](#). *Hypertension* 2016.

**Based on the evidence that is currently available, we recommend a healthy lifestyle for women who have had preeclampsia, in order to prevent cardiovascular disease. This advice is in line with [guidelines from the Norwegian Directorate of Health](#):**

- **Be physically active:** at least 150 minutes a week of physical activity intense enough to cause breathlessness, and at least 60 minutes of strength training
- Eat a **varied diet including:**
  - o plenty of all types of vegetables, fruit and berries
  - o whole wheat bread and other whole grain products
  - o regular intake of fatty and lean fish, both for dinner and on sandwiches
  - o poultry, lean meat and dairy products
  - o vegetable oils and soft and liquid margarine substituting saturated fat
- **Limit intake of:**
  - o saturated fat – by avoiding fatty meats and dairy products.
  - o salt – by choosing food with a low salt content and by avoiding adding extra salt
  - o sugars and «empty calories» – by avoiding sugary drinks, sweets and other foods with a high calorie-content and low nutritional value
- **Avoid smoking**
- Maintain **normal body weight** (body mass index 18,5-24,9kg/m<sup>2</sup>)

Furthermore, we recommend that women discuss their history of preeclampsia at routine check-ups with their General Practitioner, for instance at follow-up 6 weeks postpartum. The General Practitioner can schedule a customized follow-up program, taking into account the woman's general health and other cardiovascular risk factors, e.g. every 3rd year coinciding with the Norwegian national screening program for cervical cancer. Women who had one or more of the pregnancy complications listed below **may be offered a customized follow-up program at the discretion of their General Practitioner:**

- Preeclampsia (elevated blood pressure and proteinuria during pregnancy) and/or delivery of a growth-restricted baby
- Pregnancy induced hypertension (elevated blood pressure in pregnancy)
- Gestational diabetes

**Suggested medical examinations at the General Practitioner's** office include an evaluation of the total risk of cardiovascular disease:

- family history: close relatives with cardiovascular disease and/or diabetes
- level of physical activity
- diet
- smoking habits
- concurrent diseases (e.g. diabetes)
- body mass index (BMI; Body Mass Index) and waist/hip-ratio
- blood lipids
- fasting blood sugar or HbA1c (glycosylated haemoglobin)
- blood pressure

We recommend that women with chronic illnesses associated with an increased risk of cardiovascular disease, attend check-ups with their General Practitioner or a specialist before/during their next pregnancy as well as later in life. Previously healthy women who have had preeclampsia and who still have elevated blood pressure when discharged from the maternity ward should receive regular follow-up by their General Practitioner until their blood pressure has normalized.

Women who continue to have proteinuria after delivery should attend check-ups to exclude renal disease. Women who had gestational diabetes are recommended to perform an oral glucose tolerance test at their General Practitioner's office 3-6 months postpartum because some of these women develop diabetes. Women with pre-existing cardiovascular or renal disease before pregnancy are recommended to continue attending check-ups whether the pregnancy was complicated by preeclampsia or not.

## NATIONAL GUIDELINES FOR TREATMENT OF AND FOLLOW-UP AFTER PREECLAMPSIA

Norwegian Gynaecological Association: [Veileder i fødselshjelp 2014, Norsk gynekologisk forening](#)

National Institute for Health and Care Excellence (NICE): [NICE Guidance](#)

## INTERNATIONAL PREECLAMPSIA PATIENT ORGANIZATIONS

[Preeclampsia Foundation](#)

[Action on Pre-Eclampsia](#)

[Silver Star Society- Special Care for Mothers with Medical Complications during Pregnancy](#)

## RESPONSIBLE PUBLISHERS OF THIS PATIENT INFORMATION



**Forskningscenter for fødselshjelp  
og kvinnesykdommer**

[Research Centre for Obstetrics and Gynaecology](#), Oslo University Hospital/University of Oslo by Kjartan Moe, Annetine Staff and user representatives (with previous preeclampsia).



**Norsk gynekologisk  
forening**

**DEN NORSKE LEGEFORENING**

[Norwegian Gynaecological Association](#) Guidelines in Obstetrics, Chapter 28 (Hypertensive pregnancy complications and eclampsia); by Annetine Staff, Alice Beathe Andersgaard, Tore Henriksen, Eldrid Langesæter, Elisabeth Magnussen, Trond Melbye Michelsen, Liv Cecilie Thomsen and Pål Øian.