

# Pre-eclampsia

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## Vocabulary

Reading 1: Fast facts on preeclampsia

Reading 2: Physiology of preeclampsia

Grammar notes: Noun Phrase and Verb Phrase

A case report: Headache in Pregnancy

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## Vocabulary

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| 1. Preeclampsia<br>pree-i- <b>klamp</b> -see-uh  | 10. Proteinuria<br>proh-tee- <b>noo</b> r-ee-uh                                  |
| 2. Eclampsia<br>ih- <b>klamp</b> -see-uh   | 11. Urine dipstick protein<br><b>yoo</b> r-in <b>dip</b> -stik <b>proh</b> -teen |
| 3. Gestational hypertension<br>je- <b>stey</b> -shuh-nuhl hahy-per- <b>ten</b> -shuh n | 12. Visual disturbances<br><b>vizh</b> -oo-uh   dih- <b>stur</b> -buhns          |
| 4. Superimposed preeclampsia<br>soo-per-im- <b>pohzd</b>                               | 13. Pulmonary edema<br><b>puhl</b> -muh-ner-ee ih- <b>dee</b> -muh               |
| 5. Systolic blood pressure (SBP)<br>si- <b>stol</b> -ik                                | 14. Thrombocytopenia<br>throm-boh-sahy-tuh- <b>pee</b> -nee-uh                   |
| 6. A diastolic blood pressure (DBP)<br>dahy-uh- <b>stol</b> -ik                        | 15. Scotoma<br>skoh- <b>toh</b> -muh   |
| 7. Vasospasm<br><b>vas</b> -oh-spaz-uh m, <b>vey</b> -zoh-                             | 16. hemolytic anemia<br>hee-muh- <b>lit</b> -ik uh- <b>nee</b> -mee-uh           |
| 8. Antihypertensive therapy<br>an-tee-hahy-per- <b>ten</b> -siv                        | 17. Seizures<br><b>see</b> -zher   |
| 9. Urine specimen<br><b>yoo</b> r-in <b>spes</b> -uh-muhn                              | 18. Refractory seizures<br>ri- <b>frak</b> -tuh-ree <b>see</b> -zher             |

19. Clonus  
**kloh-nuh** s

20. Convulsions  
*kuh n-vuhl-shuh* n

21. Focal neurologic deficits  
**foh-kuh** | *noo-ruh-loj-ik* **def-uh-sit/dih-fis-it**

22. Delivery  
*dih-liv-uh-ree*

23. Induction of delivery  
in-**duhk-shuh** n *dih-liv-uh-ree*

24. Hospitalize  
**hos-pi-tl-ahyz**

25. Monitor  
**mon-i-ter**

26. Expectant management  
ik-**spek-tuh** nt **man-ij-muhnt**

27. Corticosteroid  
*kawr-tuh-koh-ster-oid*

28. Magnesium sulfate  
mag-**nee-zee-uhm** **suhl-feyt**

29. prophylaxis  
*proh-fuh-lak-sis*

30. Prophylactic treatment  
*proh-fuh-lak-tik* **treet-muhnt**

## Reading 1

# Fast facts on preeclampsia

Preeclampsia is a condition during pregnancy where there is a sudden rise in blood pressure and swelling, mostly in the face, hands, and feet.

Preeclampsia is the most common complication to occur during pregnancy. It generally develops during the third trimester and affects about 1 in 20 pregnancies.

If the preeclampsia remains untreated, it can develop to eclampsia, in which the mother can experience convulsions, coma, and can even die. However, complications from preeclampsia are extremely rare if the mother attends her prenatal appointments.

Here are some key points about preeclampsia. More detail and supporting information is in the main article.

- Preeclampsia affects roughly 5 percent of pregnancies.
- If preeclampsia is untreated, it can develop into eclampsia, a potentially life-threatening condition.

- The exact causes of preeclampsia are not known but are likely to involve blood vessels in the placenta.
- Some research implies that there is a genetic component to preeclampsia.
- According to one study, traffic pollution might be connected to preeclampsia.

## Symptoms

Initially, preeclampsia may present no symptoms; however, early signs, include:

- high blood pressure (hypertension)
- protein in the urine (proteinuria)

In the majority of cases, the woman will not be aware of these two signs, and will only find out when a doctor observes her during an antenatal visit.

Although 6 to 8 percent of all pregnant women experience high blood pressure, it does not necessarily mean they have preeclampsia. The most telling sign is the presence of protein in the urine.

As the preeclampsia progresses, the woman may experience fluid retention (edema), with swelling in the hands, feet, ankles, and face.

Swelling is a common part of pregnancy, especially during the third trimester, and tends to occur in the lower parts of the body, such as the ankles and feet. Symptoms are typically milder first thing in the morning and build up during the day. This is not preeclampsia, in which edema occurs suddenly and tends to be much more severe.

Later on, the following signs and symptoms may develop:

- blurry vision, sometimes seeing flashing lights
- headaches, often severe
- malaise

- shortness of breath
- pain just below the ribs on the right side
- rapid weight gain (caused by fluid retention)
- vomiting
- decrease in urine output
- decrease in platelets in the blood
- impaired liver function

The main sign of preeclampsia in the fetus is growth restriction due to decreased blood supply to the placenta.

Source: <https://www.medicalnewstoday.com/articles/252025.php#symptoms>

## Reading 2

# Pathophysiology of Preeclampsia

An estimated 2-8% of pregnancies are complicated by preeclampsia, with associated maternofetal morbidity and mortality. In the fetus, preeclampsia can lead to ischemic encephalopathy, growth retardation, and the various sequelae of premature birth.

Eclampsia is estimated to occur in 1 in 200 cases of preeclampsia when magnesium prophylaxis is not administered.

## Cardiovascular disease

As previously mentioned, preeclampsia is characterized by endothelial dysfunction in pregnant women. Therefore, the possibility exists that preeclampsia may be a contributor to future cardiovascular disease. In a meta-analysis, several associations were observed between an increased

risk of cardiovascular disease and a pregnancy complicated by preeclampsia. These associations included an approximately 4-fold increase in the risk of subsequent development of hypertension and an approximately 2-fold increase in the risk of ischemic heart disease, venous thromboembolism, and stroke. Moreover, women who had recurrent preeclampsia were more likely to suffer from hypertension later in life.

In a review of population-based studies, Harskamp and Zeeman noted a relationship between preeclampsia and an increased risk of later chronic hypertension and cardiovascular morbidity/mortality, compared with normotensive pregnancy. Moreover, women who develop preeclampsia before 36 weeks' gestation or who have multiple hypertensive pregnancies were at highest risk.

A prospective observational study by Vaught that included 63 women with pre-eclampsia with severe features reported higher systolic pressure, higher rates of abnormal diastolic function, decreased global right ventricular longitudinal systolic strain, increased left-sided chamber remodeling, and higher rates of peripartum pulmonary edema in these women when compared with healthy pregnant women.

Harskamp and Zeeman also found that the underlying mechanism for the remote effects of preeclampsia is complex and probably multifactorial. The risk factors that are shared by cardiovascular disease and preeclampsia are as follows:

- Endothelial dysfunction
- Obesity
- Hypertension
- Hyperglycemia
- Insulin resistance
- Dyslipidemia

Metabolic syndrome, the investigators noted, may be a possible underlying mechanism common to cardiovascular disease and preeclampsia.

## **Mechanisms behind preeclampsia**

Although hypertension may be the most common presenting symptom of preeclampsia, it should not be viewed as the initial pathogenic process.

The mechanisms by which preeclampsia occurs is not certain, and numerous maternal, paternal, and fetal factors have been implicated in its development. The factors currently considered to be the most important include the following:

- Maternal immunologic intolerance
- Abnormal placental implantation
- Genetic, nutritional, and environmental factors
- Cardiovascular and inflammatory changes

Source: <https://emedicine.medscape.com/article/1476919-overview#a3>

## Grammar notes(\*)

### A case report

History A 32-year-old woman who is 34 weeks' gestation has felt generally unwell for 24 h. She has a headache and has noticed odd visual symptoms such as 'wobbling' of objects. She initially felt that she had a viral infection but the symptoms are worsening and she thought she should get 'checked out'.

She has epigastric discomfort and nausea. Her legs have been swollen for some weeks but now her hands and face are puffy. The baby has been moving normally and there is no lower abdominal pain and no bleeding or abnormal discharge.

She booked in the pregnancy at 10 weeks with a blood pressure of 107/60 mmHg. Booking blood tests and 12- and 20-week ultrasound scans were normal.

Examination Her blood pressure is 140/85 mmHg and pulse rate 98/min. There is moderate oedema to the knees and she also appears digitally and facially oedematous. The fundi are normal.

On abdominal palpation there is mild right upper quadrant and epigastric tenderness. The uterus is not tender and symphysiofundal height measures

33 cm. The fetus is cephalic and free, with fetal parts easily felt on palpation. Patellar reflexes are normal.

		<i>Normal range for pregnancy</i>
Haemoglobin	9.3 g/dL	11–14 g/dL
Packed cell volume	42%	31–38%
Mean cell volume	81 fL	74.4–95.6 fL
White cell count	$6.0 \times 10^9/L$	$6–16 \times 10^9/L$
Platelets	$97 \times 10^9/L$	$150–400 \times 10^9/L$
Sodium	139 mmol/L	130–140 mmol/L
Potassium	4.2 mmol/L	3.3–4.1 mmol/L
Urea	4 mmol/L	2.4–4.3 mmol/L
Creatinine	83 $\mu\text{mol/L}$	34–82 $\mu\text{mol/L}$
Alanine transaminase	172 IU/L	6–32 IU/L
Alkaline phosphatase	238 IU/L	30–300 IU/L
Gamma glutamyl transaminase	26 IU/L	5–43 IU/L
Bilirubin	37 $\mu\text{mol/L}$	3–14 $\mu\text{mol/L}$
Albumin	26 g/dL	28–37 g/L
Urate	0.38 mmol/L	0.14–0.38 mmol/L
Urinalysis: + protein		

## Question

*What is the likely diagnosis?*

## Answer

*The diagnosis is HELLP syndrome (haemolysis, elevated liver enzymes and low platelets). HELLP syndrome is part of the spectrum of pre-eclampsia, and is a serious condition with a relatively high maternal mortality (1 per cent) and perinatal mortality (up to 60 per cent). Maternal complications include placental abruption, renal failure, liver failure and disseminated intravascular coagulopathy (DIC). Fetal complications arise from prematurity, abruption and uteroplacental insufficiency. The diagnosis is made on the blood test results showing the relevant features of HELLP. In this case there is also pregnancy-induced hypertension and proteinuria. However these clinical features do not need to be present to make the diagnosis of HELLP syndrome. HELLP may present antenatally or in the first few days postpartum. The symptom of epigastric or right upper quadrant pain should always raise suspicion in a pregnant woman, as it is a sign of liver capsule stretching and may precede liver rupture.*