

# Preeclampsia case study

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At 0600 Jennie is brought to the Labor and Delivery triage area by her sister. The client complains of a pounding headache for the last 12 hours unrelieved by acetaminophen (Tylenol), swollen hands and face for 2 days, and epigastric pain described as bad heartburn. Her sister tells the nurse, " I felt like that when I had toxemia during my pregnancy. " Admission assessment by the nurse reveals: today's weight 182 pounds, T 99. 1° F, P 76, R 22, BP 138/88, 4+ pitting edema, and 3+ protein in the urine. Heart rate is regular, and lung sounds are clear.

Deep tendon reflexes (DTRs) are 3+ biceps and triceps and 4+ patellar with 1 beat of ankle clonus. The nurse applies the external fetal monitor, which shows a baseline fetal heart rate of 130, absent variability, positive for accelerations, no decelerations, and no contractions. The nurse also performs a vaginal examination and finds that the cervix is 1 cm dilated and 50% effaced, with the fetal head at a -2 station. 1. In reviewing Jennie's history, the nurse is correct in concluding that Jennie is in jeopardy of developing a hypertensive disorder because of her age (15).

Which other factors add to Jennie's risk of developing preeclampsia? A) Molar pregnancy, history of preeclampsia in previous pregnancy. INCORRECT While all of these are risk factors for preeclampsia, Jennie has no indications of a molar pregnancy (first trimester vaginal bleeding, size/date discrepancy, or excessive nausea and vomiting), nor has she had any previous pregnancies (gravida 1). B) Gravity, familial history. CORRECT Jennie is under 17 years of age, is pregnant for the 1st time, and has a sister with a history of toxemia, which is an old term for preeclampsia that some clients may still use.

C) History of pounding headache, low socioeconomic status. INCORRECT While age and low socioeconomic status (SES) are risk factors, Jennie's SES is unknown. A pounding headache is a symptom, not a risk factor. D) Low socioeconomic status (SES), history of pedal edema. INCORRECT Although age and low SES are risk factors, this client's SES is unknown. Pedal edema is common in pregnancy after 32-weeks. 2. To accurately assess this client's condition, what information from the prenatal record is most important for the nurse to obtain? A) Pattern and number of prenatal visits. INCORRECT

It is important to have early and consistent prenatal care, but this information will not help in the assessment of this client's condition. B) Prenatal blood pressure readings. CORRECT The client's BP (138/88) is below the guideline that indicates mild preeclampsia. Blood pressure parameters for mild preeclampsia include a reading of 140/90 taken on two occasions 6 hours apart. However, Jennie's reading is significant if it is an increase of 30 mm systolic or 15 mm diastolic from her prenatal levels, particularly in combination with proteinuria and hyperuricemia (uric acid of 6 mg/dl or more).

Blood pressure usually remains the same during the first trimester. Both systolic and diastolic then decrease gradually up to 20-weeks gestation. At 20 weeks of gestation, the blood pressure begins to gradually increase and return to 1st trimester levels at term. C) Prepregnancy weight. INCORRECT The nurse should compare today's weight to Jennie's most recently obtained previous weight, not to the prepregnancy weight. A weight gain of ; 2 pounds per week is indicative of mild preeclampsia. D) Jennie's Rh factor. INCORRECT

While the Rh factor of the mother is important in determining the need for prophylactic Rh immune globulin (RhoGAM) at 28-weeks and after birth, it is not the most important information at this time. All Rh negative women with negative Coomb's tests are given RhoGam prophylactically at 28-weeks, and then evaluated immediately after birth to determine if another dose of RhoGam is needed. Pathophysiology of Preeclampsia There is no definitive cause of preeclampsia, but the pathophysiology is distinct. The main pathogenic factor is poor perfusion as a result of arteriolar vasospasm.

Function in organs such as the placenta, liver, brain, and kidneys can be depressed as much as 40 to 60%. As fluid shifts out of the intravascular compartment, a decrease in plasma volume and subsequent increase in hematocrit is seen. The edema of preeclampsia is generalized. Virtually all organ systems are affected by this disease, and the mother and fetus suffer increasing risk as the disease progresses. Preeclampsia develops after 20 weeks gestation in a previously normotensive woman. Elevated blood pressure is frequently the first sign of preeclampsia.

The client also develops proteinuria. While no longer considered a diagnostic measurement of preeclampsia, generalized edema of the face, hands, and abdomen that is not responsive to 12 hours of bedrest is often present. Preeclampsia progresses along a continuum from mild to severe preeclampsia, HELLP syndrome, or eclampsia. A client may present to the labor unit anywhere along that continuum. 3. What is the pathophysiology responsible for Jennie's complaint of a pounding headache and the elevated DTRs? A) Cerebral edema. CORRECT

As fluid leaks into the extravascular spaces, organ edema as well as peripheral edema occurs. This, in conjunction with cortical brain spasms, causes headache, increased deep tendon reflexes, and clonus. B) Increased perfusion to the brain. INCORRECT The hypovolemia that accompanies preeclampsia decreases perfusion to the major organs. C) Severe anxiety. INCORRECT While Jennie may be very anxious, this is not the pathophysiology involved. D) Retinal arteriolar spasms. INCORRECT These spasms are the cause of blurred vision and scotoma that often accompany worsening of the disease.

Jennie's sister is very concerned about the swelling (edema) in her sister's face and hands because it seems to be worsening rapidly. She asks the nurse if the healthcare provider will prescribe some of "those water pills" (diuretics) to help get rid of the excess fluid. 4. Which response by the nurse is correct? A) "That is a very good idea. I will relay it to the healthcare provider when I call." INCORRECT Although it is caring to offer to relay family concerns to the healthcare provider, the physician will make the decision on treatment.

B) "I'm sorry, but it is not the family's place to make suggestions about medical treatment." INCORRECT While it is not inappropriate for family members to make suggestions, this answer is not sensitive to the sister's desire to help Jennie. C) "Let me explain to you about the effect of diuretics on pregnancy." CORRECT The sister may have seen diuretics used for treating fluid retention before (for example, in cardiac disease), but may not be aware of how diuretics affect pregnancy. Diuretics decrease blood flow to the placenta by decreasing blood volume.

In the case of the preeclamptic client, this is particularly dangerous because the disease has already caused a volume deficit. In addition, the diuretics disrupt normal electrolyte balance and stress kidneys that are already compromised by preeclampsia. The only time they are used is if the preeclamptic client also has heart failure, but this client has no symptoms of heart failure. D) " Have you by any chance given your sister water pills that belong to someone else? " INCORRECT This could be construed as hostile and accusatory.

If the nurse believes further assessment is warranted, the nurse should ask Jennie about any medication she has taken. Admission to the Labor and Delivery Unit At 0630 the nurse calls to report to the healthcare provider, who prescribes the following: admit to labor and delivery, bedrest with bathroom privileges (BRP), IV D5LR at 125 ml/hr, CBC with platelets, clotting studies, liver enzymes, chemistry panel, 24-hour urine collection for protein and uric acid, ice chips only by mouth, nonstress test, hourly vital signs, and DTRs. 5.

While awaiting the lab results, which nursing intervention has the highest priority? A) Teach Jennie the rationale for bedrest. INCORRECT While this is important, it does not have the highest priority. B) Monitor Jennie for signs of dehydration. INCORRECT This is important because the client is restricted to ice chips only and may already be hypovolemic. However, it is not the highest priority. C) Educate the client about dietary restrictions. INCORRECT Since Jennie is currently taking ice chips only, this is not the most important intervention at this time. D) Observe Jennie for CNS changes.

CORRECT Central Nervous System (CNS) changes such as severe headache, blurred vision, scotoma (spots before eyes), and photophobia indicate a worsening condition. 6. Which technique should the nurse use when evaluating Jennie's blood pressure while she is on bedrest? A) Have Jennie lay supine and take the blood pressure on the left arm. INCORRECT The pregnant client should not lie in the supine position because it puts her at risk for vena cava compression and subsequent supine hypotensive syndrome. B) Have Jennie lie in a lateral position and take the blood pressure on the dependent arm.

CORRECT The lateral position supports placental perfusion. The lower (dependent) arm should be positioned so the client is not lying on it, and the blood pressure should be taken in that arm. This more closely approximates arterial pressure. Using the arm on the opposite (upper) side will falsely reduce the measurement. C) Have the client sit in a chair at the bedside, and take the blood pressure with her left arm at waist level. INCORRECT While sitting is an appropriate position, the arm should be resting on a surface at heart level.

In addition, Jennie is on bedrest with bathroom privileges, which does not include sitting up in a chair. D) Have Jennie stand briefly and take the blood pressure on the right arm. INCORRECT A standing blood pressure does not provide the most valid reading. In addition, Jennie is on bedrest with bathroom privileges, which does not include standing at the bedside. The nurse performs a nonstress test to evaluate fetal well-being. 7. When performing a nonstress test (NST), the nurse will be assessing for which

parameters? A) Accelerations of the fetal heart rate in response to fetal movement. CORRECT

The basis for the nonstress test is that the normal fetus with an intact CNS will respond to fetal movements by increasing its heart rate (episodic accelerations). A reactive test is one in which the fetus displays at least 2 accelerations of 15 beats per minute that last for 15 seconds in a 20-minute period in the presence of a normal baseline rate and moderate variability.

B) Late decelerations of the fetal heart rate in response to fetal movement. INCORRECT Late decelerations are a sign of uteroplacental insufficiency, and are assessed for in response to uterine contractions, not fetal movement.

C) Accelerations of the fetal heart rate in response to uterine contractions. INCORRECT Accelerations that occur with contractions (periodic accelerations) are usually linked to breech presentations, and are not the basis for the nonstress test. D) Late decelerations of the fetal heart rate in response to uterine contractions. INCORRECT Late decelerations in response to uterine contractions are the basis for the contraction stress test. HELLP Syndrome At 0800, physical assessment and labs reveal the following: the client is still complaining of a headache but the epigastric pain has slightly decreased.

While resting in a left lateral position, the vital signs are BP 146/94, P 75, R 18. Hyperreflexia continues with one beat of clonus. The baseline fetal heart rate is 140 with moderate variability and no decelerations. Since completion of a reactive nonstress test, no further accelerations have occurred. Lab results include: hemoglobin - 13.1 g/dl, hematocrit - 40.5 g/dl, platelets - 120,000 mm<sup>3</sup>, aspartate aminotransferase (AST) - slightly elevated, alanine

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aminotransferase (ALT) - normal for pregnancy, 0 burr cells on slide, clotting studies normal for pregnancy.

The healthcare provider diagnoses Jennie with preeclampsia rather than HELLP syndrome, a variant of severe preeclampsia. 8. If Jennie had HELLP syndrome, which lab results would the nurse expect her to exhibit?

A) Elevated hemoglobin and hematocrit (H&H) without burr cells, elevated liver enzymes, platelet count > 150, 000 mm<sup>3</sup>. INCORRECT Elevated H&H without burr cells and platelets > 150, 000 mm<sup>3</sup> are not indicative of HELLP syndrome. B) Decreased hemoglobin and hematocrit (H&H) with burr cells, elevated liver enzymes, platelet count