

1- Discuss the underlying pathophysiological mechanisms of your assigned disease process. Which clinical manifestations observed in Janessa's case could be explained by the pathophysiological mechanisms?

Anemia is the most common blood disorder. The pathophysiology of anemia involves a disruption in the balance between the production and loss of red blood cells (RBCs), which ultimately reduces the blood's oxygen-carrying capacity. This imbalance typically occurs through three primary mechanisms: reduced production of RBCs (bone marrow failure, nutritional deficiency), increased destruction of RBCs (hemolysis), or blood loss.

Janessa's symptoms of shortness of breath, weakness, and dizziness are directly linked to how anemia affects oxygen transport in the body:

- **Shortness of Breath:** Because there is less hemoglobin available to carry oxygen from the lungs to the tissues, the body often compensates by increasing the breathing rate. This results in dyspnea particularly when the body needs more oxygen during physical activity.
- **Weakness:** Muscles and vital organs require a steady flow of oxygen to generate energy. When oxygen delivery is insufficient, it leads to physical fatigue, lethargy, and general feeling of weakness
- **Dizziness:** The brain is highly sensitive to oxygen levels. A drop in oxygen supply (central hypoxia) can cause lightheadness, vertigo, or dizziness.

2- Analyze Janessa's clinical manifestations in the context of your assigned disease process. Do these findings support a diagnosis of your assigned disease process? Why or why not?

Janessa's symptoms strongly suggest anemia:

- **Pale Mucous Membranes:** A hallmark indicator of low hemoglobin.

- **Weakness and Shortness of Breath:** Common reactions to the body's decreased oxygen supply.

These clinical signs, combined with her history of endometriosis (condition often linked to chronic blood loss) point toward anemia. While the symptoms are clear, additional testing is required to identify the exact cause or type.

3- Identify and justify the diagnostic tests (including labs, imaging, or other diagnostic tests) that would be most appropriate for investigating a diagnosis of your assigned disease process in Janessa. What could the results of these tests look like in your assigned disease process?

Diagnostic testing should focus on determining whether an anemia is present and then identifying the underlying etiology. Basic assays (complete blood count, reticulocyte count, and blood smear) will be reviewed first, then iron and B12 and folate levels (Cascio & DeLoughery, 2017).

Test	Objective	Anticipated Anemic Results
Complete Blood Count	To measure the concentration of red blood cells and hemoglobin.	Reduced hemoglobin and hematocrit levels.
Reticulocyte Count	To assess how effectively the bone marrow is producing new red blood cells.	Often low or normal if production is impaired.
Iron Studies	To evaluate the body's iron stores and transport capacity.	Low serum iron and ferritin, typical of iron deficiency.
B12 & Folate Levels	To check for nutritional deficiencies that impact cell development.	Decreased levels if the anemia is rooted in poor nutrition.