Week 3 response

Asthma is a chronic condition that causes inflammation in the airways, leading to symptoms like shortness of breath, wheezing, and coughing. The underlying mechanisms of asthma include airway inflammation, bronchoconstriction (narrowing of the airways), and bronchial hyperresponsiveness (increased sensitivity to triggers). In response to various stimuli such as allergens or irritants, the immune system triggers an inflammatory response that leads to airway edema, increased mucus production, and muscle tightening around the airways. Over time, this inflammation can lead to permanent changes in the structure of the airways, a process called airway remodeling. This chronic inflammation is what makes asthma a persistent condition, though symptoms can vary in severity from person to person (Beasley et al., 2022).

In Janessa's case, her symptoms of shortness of breath, dizziness, and weakness could potentially be explained by asthma, though they aren't classic or straightforward. Shortness of breath in asthma happens because the airways become narrowed and less air can get in and out of the lungs. This makes breathing harder and often causes a feeling of tightness in the chest (Vignola et al., 2021). Dizziness and weakness may occur when asthma leads to insufficient oxygen delivery to tissues, especially if her breathing is compromised, making it harder for the body to get enough oxygen. The pale mucous membranes she presents with could be a sign of hypoxia, or low oxygen levels in the blood, which can happen when airflow is significantly reduced. However, Janessa's case is somewhat atypical because she doesn't report wheezing or coughing, and her lung exam is clear. These are not the typical findings in an asthma exacerbation, where wheezing and prolonged expiration are common signs (Pijnenburg & Baraldi, 2021). This raises the possibility that her symptoms may be due to something else, such as anemia or a cardiovascular issue.

To better understand whether asthma is the cause of Janessa's symptoms, several diagnostic tests would be helpful. Spirometry, a common pulmonary function test, would measure how much air she can exhale and how quickly. In asthma, the test typically shows reduced airflow that improves after taking a bronchodilator. A peak flow test can also help measure her maximum exhalation speed, which can indicate airflow limitation. If asthma is suspected but spirometry results are normal, a methacholine challenge test could be used to trigger airway narrowing and assess bronchial hyperresponsiveness. Allergy tests might