



Research Paper

## An Adult with Severe Asthma: A Case Study

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### Abstract

A patient with poorly controlled asthma is presented in this case. As a nurse, following the protocol of care was crucial in this case. Researchers follow the nursing process and provide care according to the protocol in this case study.

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### I. Introduction:

Asthma is a chronic respiratory condition characterized by inflammation and narrowing of the airways, resulting in recurrent episodes of wheezing, breathlessness, chest tightness, and coughing. It affects people of all ages, but it often starts in childhood and can persist into adulthood. Asthma can vary in severity, with some individuals experiencing mild symptoms and others having more frequent and severe attacks (WHO, 2023).

According to the World Health Organization (WHO), approximately 262 million people worldwide have asthma and caused 455 000 deaths in 2019. It is estimated that asthma affects around 8% of adults and 10% of children globally. The prevalence of asthma has been increasing over the past few decades, particularly in developed countries. Asthma is a significant public health concern due to its impact on quality of life, healthcare utilization, and overall healthcare costs (WHO, 2023).

### Patient's Profile:

A.A. is a male, 33 years old patient from AL Obead Hospital, Al Ahsa. He is Saudi, inter in the hospital at October 2023. His vital signs was BP: 130/80, PR: 110, RR: 24, TEMP: 37 C, SpO2: 93%, Pain Scale: 2/10.

The patient complained of shortness of breathing and coughing with flu for one week. The patient is male 33 years old came to ER complaining of Shortness of breath and coughing with flu for one week. Physical examination, blood tests (CBC, biochemistry, VBG), chest X-Ray were done. 10 years ago, the patient was diagnosed with Asthma, and he is on routine medication since then. No history of surgical intervention. No known food/drug allergies. Allergen to dust mites, pet, and pollen.

### Gordon's 11# Functional Health Pattern:

The patient demonstrates a strong commitment to maintaining good health and managing his condition effectively. He follows a healthy lifestyle, avoids triggers such as dust and smoke, and carries his inhaler at all times for emergency situations. However, his focus on health seems to be limited to dental checkups. The patient maintains a balanced and regular diet, consuming three meals a day and an adequate amount of water. His diet includes vegetables, carbohydrates, proteins, and fats. His skin appears healthy and well-hydrated. The patient has

regular bowel movements without any abnormalities. His urine color is clear, indicating proper hydration. There are no significant issues related to elimination.

The patient's physical activities are limited due to increased exertion and respiratory symptoms associated with his condition. He engages in low effort walking three times a week. The patient experiences difficulty sleeping at night due to increased coughing associated with his condition. He typically sleeps for about 5 to 6 hours a day.

The patient demonstrates normal cognitive function and sensory perception. He is aware of his surroundings, including time, place, and people, and communicates without any apparent problems. The patient is experiencing some stress and weak responses, likely due to the challenges posed by his illness. However, he accepts his condition and the limited complications that accompany it. The patient is married with children and works as a teacher. He maintains excellent family relationships and has good rapport with his co-workers.

The patient reports satisfaction with his marital relationship, indicating a healthy sexual and reproductive pattern. The patient employs yoga and deep breathing exercises as coping mechanisms to manage stressors associated with his condition. As a practicing Muslim, the patient finds solace and support in his faith. He engages in prayer and reads the Quran as part of managing his situation.

### **Physical Assessment (with analysis and interpretation):**

#### **Neurologic system:**

Cranial Nerves: Olfactory nerve (CN I): Intact; the patient is able to identify and differentiate various smells correctly. Optic nerve (CN II): Intact; visual acuity is normal, with the patient able to read letters or objects at an appropriate distance and visual fields are intact, with the patient able to perceive objects in the peripheral vision. Oculomotor nerve (CN III): Intact; pupils are equal in size and constrict normally in response to light and extraocular movements are normal, allowing the patient to follow objects smoothly with both eyes. Trochlear nerve (CN IV): Intact; the patient can move the eyes downward and inward appropriately without any limitations. Trigeminal nerve (CN V): Intact; sensation and pain perception are intact in all three branches of the trigeminal nerve (ophthalmic, maxillary, and mandibular). The patient can perform normal chewing movements without any difficulties.

Abducens nerve (CN VI): Intact; the patient can move the eyes laterally without any limitations. Facial nerve (CN VII): Intact; facial expressions are symmetrical during voluntary movements. Taste perception is normal on the anterior two-thirds of the tongue. Vestibulocochlear nerve (CN VIII): Intact; the patient can hear and differentiate sounds appropriately. The patient maintains balance and coordination during normal movements. Vagus nerve (CN X): Intact; the patient can swallow without difficulty. Taste perception is normal on the posterior one-third of the tongue. Accessory nerve (CN XI): Intact; the patient can shrug the shoulders against resistance. The patient can turn the head against resistance. Hypoglossal nerve (CN XII): Intact; the patient can move the tongue in different directions without any weakness or deviation.

#### **Musculoskeletal System:**

Inspection: Intact; the posture appears normal without any obvious deformities or asymmetry. The spine is straight with no visible abnormalities. Limb alignment is normal, and there are no signs of swelling or redness. Palpation: Intact; there are no areas of tenderness, swelling, or abnormal masses. Muscle tone feels normal, and there are no signs of muscle atrophy or spasms. Joints move smoothly without any crepitus or restriction of movement.

#### **Cerebellar:**

Inspection: Intact, the patient demonstrates coordinated movements and balance. There are no involuntary movements or tremors noted. Gait appears normal without any abnormalities in stride or coordination. Palpation: Intact, there are no palpable abnormalities or tenderness in the cerebellar region. The patient's muscle strength feels symmetrical and normal.

#### **Head and Face:**

Inspection: Intact, the head is normocephalic and without any visible deformities. Facial features appear symmetrical and without any drooping or asymmetry. There are no signs of abnormal hair distribution or lesions on the scalp. Palpation: Intact, the scalp feels intact without any tenderness or masses. The temporomandibular joint (TMJ) moves smoothly without any clicking or tenderness.

**Eyes:** Inspection: Intact, eyeballs are aligned and symmetrical in the eye sockets. The conjunctiva appears pink and without any signs of redness or irritation. Pupils are equal in size and react appropriately to light.

**Neck:** Inspection: Intact, the neck is straight without any visible masses or deformities. There are no visible pulsations or distension of the neck veins. Palpation: Intact, the neck feels supple without any areas of tenderness or abnormal masses. The thyroid gland is non-enlarged and without any palpable nodules.

**Chest:** Inspection: The patient exhibit increased respiratory effort, such as the use of accessory muscles (intercostal retractions) and visible nasal flaring. The chest shows signs of increased respiratory rate (tachypnea). There are audible wheezing and prolonged expiration. Percussion: Percussion of the chest produce normal resonant sounds, indicating air-filled lungs. Palpation: Palpation of the chest wall reveal increased tactile fremitus (vibration) due to increased airway resistance and bronchial constriction. There are areas of chest wall tenderness if the patient has been coughing excessively or experiencing muscle strain from increased effort during breathing. Auscultation: Auscultation of the chest reveals wheezing, which is a characteristic high-pitched, musical sound heard during expiration. The wheezing is diffusely heard throughout the lung fields. Crackles are heard due airway inflammation.

**Heart & Neck Vessels:** Inspection: Intact, the precordium appears normal, without visible pulsations or abnormal lifts. There are no visible jugular venous distension or visible pulsations. Palpation: Intact, there are no palpable thrills or abnormal pulsations in the precordium. - Apical impulse is felt at the appropriate location without any abnormalities. Auscultation: Intact, heart sounds (S1 and S2) are clear and regular without any murmurs, rubs, or gallops. There are no abnormal vascular sounds (e.g., bruits) heard over the carotid arteries.

**Upper Extremities:** Inspection: Intact, both upper extremities appear symmetrical without any visible deformities or swelling. There are no signs of cyanosis or clubbing of the fingers. - Nail beds are pink and without any abnormalities. Palpation: Intact, there are no areas of tenderness or abnormal masses in the upper extremities. Peripheral pulses (e.g., radial, brachial) are present and symmetrically palpable.

**Lower Extremities:** Inspection: Intact, both lower extremities appear symmetrical without any visible deformities or swelling. There are no signs of cyanosis or edema. - Skin color is normal without any lesions or ulcers. Palpation: Intact, there are no areas of tenderness or abnormal masses in the lower extremities. Peripheral pulses (e.g., femoral, popliteal, dorsalis pedis, posterior tibial) are present and symmetrically palpable.

**Abdomen:** Inspection: Intact, the abdomen appears rounded without any visible masses or distension. There are no visible pulsations or peristaltic waves. The umbilicus is centrally located and without any signs of inflammation or discharge. Auscultation: Intact, bowel sounds are present and heard as high-pitched, gurgling sounds occurring irregularly. Bowel sounds are audible in all four abdominal quadrants. There are no abnormal vascular sounds, such as bruits, heard over major arteries like the abdominal aorta or renal arteries. Percussion: Intact, percussion of the abdomen produces normal tympanic sounds over the gastric area and dullness over the liver and spleen. Palpation: Intact, the abdomen is soft and non-tender to palpation. There are no palpable masses, organ enlargement, or abnormal fluid accumulation. Liver and spleen are not palpable below the costal margin.

**Renal System:** Inspection: Intact, there are no visible abnormalities or deformities in the renal area. - Skin color appears normal without any signs of jaundice or rashes. Palpation: Intact, there are no areas of tenderness or abnormal masses in the renal area. Kidneys are not palpable bilaterally.

**Laboratory and Diagnostic Examination (with analysis and interpretation):**

Test	Result	Normal Range
WBC	10.94 $10^3/\mu\text{L}$	4.0-10.0 $10^3/\mu\text{L}$
RBC	5.43 $10^6/\mu\text{L}$	4.5-5.5 $10^6/\mu\text{L}$
HGB	15.4 g/dL	13-17 g/dL
HCT	46%	40-50%
Platelets	249 $10^3/\mu\text{L}$	150-450 $10^3/\mu\text{L}$
Sodium	139 mEq/L	136-145 mEq/L
Potassium	3.68 mEq/L	3.5-5.1 mEq/L
pH	7.32	7.35 to 7.45
PaCO <sub>2</sub>	48	35-45
HCO <sub>3</sub>	22	22-26
<b>Test</b>	<b>Analysis and Interpretation</b>	
chest X-Ray	It shows hyperinflation	

**Anatomy and Physiology (focus on patient’s disease):**

To understand asthma, it is essential to have a basic understanding of the anatomy and physiology of the respiratory system. The respiratory system consists of the upper respiratory tract (including the nose, mouth, and throat) and the lower respiratory tract (including the trachea, bronchi, bronchioles, and lungs) (Seeley, 2010).

When we breathe in, air enters through the nose or mouth and travels down the trachea, which then branches into two main bronchi that lead to the lungs. Inside the lungs, the bronchi further divide into smaller tubes called bronchioles. At the end of the bronchioles are tiny air sacs called alveoli, where the exchange of oxygen and carbon dioxide takes place (Seeley, 2010).

### **Pathophysiology:**

Asthma is primarily characterized by chronic inflammation and hyperresponsiveness of the airways. In individuals with asthma, the airways are overly sensitive to various triggers, leading to exaggerated bronchoconstriction (narrowing of the airways) and increased mucus production (Olivier, 2015).

The inflammation in asthma involves the release of inflammatory mediators, such as histamine, leukotrienes, and cytokines. These substances cause increased blood flow, swelling, and mucus production in the airways, leading to airway narrowing. Additionally, the smooth muscles surrounding the airways may contract excessively, further contributing to the narrowing (Olivier, 2015).

Triggers for asthma attacks can vary among individuals, but common ones include allergens (e.g., dust mites, pollen, pet dander), respiratory infections, exercise, cold air, air pollutants, and certain medications. When exposed to triggers, individuals with asthma may experience symptoms such as wheezing, shortness of breath, coughing, and chest tightness (Olivier, 2015).

The pathophysiology of asthma is also influenced by genetic and environmental factors. There is evidence to suggest that certain genetic variations can increase the susceptibility to asthma, while environmental factors, such as exposure to tobacco smoke during early childhood, may contribute to the development and severity of the condition (Olivier, 2015).

### **Signs and symptoms:**

Here are the common signs and symptoms of asthma (Smeltzer et al., 2010):

1. Wheezing: A high-pitched whistling sound during breathing, especially when exhaling.
2. Coughing: A persistent cough, often worse at night or early morning.
3. Chest tightness: A feeling of constriction or pressure in the chest.
4. Shortness of breath: Difficulty breathing, with a sensation of not getting enough air.

### **Management:**

The management of asthma involves several key aspects, including (Smeltzer et al., 2010):

1. Avoiding triggers: Identify and avoid factors that can worsen asthma symptoms, such as allergens (e.g., pollen, dust mites, pet dander), respiratory infections, tobacco smoke, air pollution, and certain medications.
2. Medications:
  - a. Quick-relief medications: Short-acting bronchodilators (e.g., albuterol) provide immediate relief by relaxing the muscles around the airways, making it easier to breathe during an asthma attack.
  - b. Long-term control medications: Inhaled corticosteroids (e.g., fluticasone) are the most effective long-term medications for reducing airway inflammation and preventing asthma symptoms.
  - c. Other medications, such as long-acting beta-agonists, leukotriene modifiers, and immunomodulators, may also be prescribed depending on the severity of the condition.
3. Asthma action plan: Develop a written asthma action plan with your healthcare provider. This plan outlines daily management strategies, medication use, and steps to take during worsening symptoms or an asthma attack.
4. Regular check-ups: Visit your healthcare provider regularly to monitor your asthma control, adjust medications if needed, and assess lung function through spirometry tests.
5. Lifestyle modifications: Maintain a healthy lifestyle by exercising regularly (with precautions as advised by your healthcare provider), managing stress, and avoiding exposure to smoke and other respiratory irritants.
6. Education and self-management: Learn about asthma triggers, medications, and proper inhaler techniques. Understand how to recognize worsening symptoms and when to seek medical attention.

### **Comparison:**

The gaps between the evidence-based care and the actual patient case are regular check-ups, lifestyle modifications, and education and self-management as the patient is not practicing them.

**Medication:**

Name of the drug (Classification)	Indication	Action	Adverse Reaction	Contraindication	Nursing Consideration
Albuterol (Salbutamol).  Classification: Albuterol is a short-acting beta-agonist bronchodilator.	Albuterol is indicated for the relief of bronchospasm in patients with reversible obstructive airway disease, including asthma.	It stimulates beta-2 adrenergic receptors in the smooth muscles of the airways, causing relaxation and bronchodilation.	Common adverse reactions may include tremor, palpitations, tachycardia, headache, nervousness, and throat irritation.	Albuterol is contraindicated in patients with a hypersensitivity to albuterol or any of its components.	Nurses should assess the patient's respiratory status before and after administration, monitor vital signs, educate patients on proper inhaler technique, and provide information on potential adverse effects (Deglin & Vallerand, 1988).
Ipratropium bromide.  Classification: Ipratropium bromide is an anticholinergic bronchodilator.	Ipratropium bromide is indicated for the maintenance treatment of bronchospasm associated with chronic obstructive	It blocks the action of acetylcholine, a neurotransmitter, thereby relaxing the smooth muscles of the airways and improving airflow.	Common adverse reactions may include dry mouth, cough, hoarseness, headache, and urinary retention.	Ipratropium bromide is contraindicated in patients with a hypersensitivity to ipratropium bromide or any of its components.	Nurses should assess the patient's respiratory status, monitor for anticholinergic effects, educate patients on proper inhaler technique, and
	pulmonary disease (COPD), including chronic bronchitis and emphysema.				encourage adequate fluid intake to prevent dry mouth (Deglin & Vallerand, 1988).
Prednisone.  Classification: Prednisone is a corticosteroid.	Prednisone is indicated for the treatment of severe asthma exacerbations and as part of long-term asthma management in some cases.	It has potent anti-inflammatory and immunosuppressive properties, reducing airway inflammation and suppressing the immune response.	Common adverse reactions may include increased appetite, weight gain, fluid retention, mood changes, and increased susceptibility to infections.	Prednisone is contraindicated in patients with systemic fungal infections and in those with known hypersensitivity to prednisone or any of its components.	Nurses should monitor for signs of adrenal insufficiency, assess for fluid retention, monitor blood glucose levels in patients with diabetes, and educate patients on the importance of adhering to the prescribed tapering regimen (Deglin & Vallerand, 1988).
Methylprednisolone.  Classification: Methylprednisolone is a corticosteroid.	Methylprednisolone is indicated for the treatment of acute severe asthma exacerbations.	Similar to prednisone, methylprednisolone has anti-inflammatory and immunosuppressive effects.	Common adverse reactions may include increased appetite, insomnia, mood changes, increased susceptibility to infections, and gastrointestinal disturbances.	Methylprednisolone is contraindicated in patients with systemic fungal infections and in those with known hypersensitivity to methylprednisolone or any of its components.	Nurses should closely monitor the patient's respiratory status, assess for potential adverse effects, monitor blood glucose levels in patients with diabetes, and provide education

					on the importance of completing the prescribed course of medication (Deglin & Vallerand, 1988).
Montelukast. Classification: Montelukast is a leukotriene receptor antagonist.	Montelukast is indicated for the prevention and chronic treatment of asthma, including the prevention of exercise-induced bronchoconstriction.	It works by blocking the action of leukotrienes, which are inflammatory mediators involved in bronchoconstriction and inflammation in the airways.	Common adverse reactions may include headache, gastrointestinal disturbances, hypersensitivity reactions, and neuropsychiatric events (rare).	Montelukast is contraindicated in patients with a hypersensitivity to montelukast or any of its components.	Nurses should assess the patient's response to therapy, monitor for potential adverse effects, educate patients on adherence to the prescribed dosage regimen, and inform patients about the rare neuropsychiatric events associated with montelukast (Deglin & Vallerand, 1988).

**Nursing Care Plan:**

Assessment	Nursing Diagnosis	Goals	Nursing Interventions	Rationale	Evaluation
<p><b>Subjective data:</b> Reports of shortness of breath, coughing, chest tightness, and difficulty breathing.</p> <p><b>Objective data:</b> Wheezing and crackles. Decreased oxygen saturation levels 93%.</p>	<p>Impaired Gas Exchange related to airway obstruction and inflammation as evidenced by shortness of breath, wheezing, and decreased oxygen saturation levels (Doenges, et al., 2008).</p>	<p><b>Short-term goal:</b> Within 24 hours, the patient will achieve improved respiratory status as evidenced by decreased wheezing, improved oxygen saturation levels, and reduced shortness of breath.</p> <p><b>Long-term goal:</b> Within one month, the patient will demonstrate effective management of asthma symptoms through proper medication adherence, lifestyle modifications, and self-care techniques (Doenges, et al., 2008).</p>	<p>1. Monitor respiratory status: Regularly assess the patient's respiratory rate, rhythm, and effort, as well as lung sounds and oxygen saturation levels.</p> <p>2. Administer prescribed medications: Ensure that the patient receives their prescribed bronchodilators, corticosteroids, or other anti-inflammatory medications as ordered.</p> <p>3. Provide education on triggers and avoidance measures.</p> <p>4. Teach proper inhaler technique: Demonstrate and supervise the patient in using their inhaler correctly.</p>	<p>1. It helps in assessing the effectiveness of treatment and identifying any deterioration in the patient's condition.</p> <p>2. It helps relieve airway constriction, reduce inflammation, and improve overall respiratory function.</p> <p>3. It empowers them to make informed decisions and minimize exposure to factors that worsen asthma symptoms.</p> <p>4. It ensures that the patient receives the full benefit of the medication and maximizes its effectiveness.</p> <p>5. It empowers the patient to take an active role in their asthma management, leading to improved outcomes and reduced hospital admissions (Doenges, et al., 2008).</p>	<p>The goals are in progress.</p>

			5.Promote self-management and adherence (Doenges, et al., 2008).		
<p><b>Subjective data:</b> Reports of chest congestion</p> <p><b>Objective data:</b> BP: 130/80, PR: 110, RR: 24, TEMP: 37 C, SpO2: 93%, Pain Scale: 2/10. Wheezing, coughing.</p>	<p>Ineffective Airway Clearance related to bronchospasm and excessive mucus production as evidenced by wheezing, coughing, and chest congestion.</p>	<p><b>Short-term goal:</b> Within 8 hours, the patient will demonstrate improved airway clearance as evidenced by decreased wheezing, productive coughing, and improved breath sounds.</p> <p><b>Long-term goal:</b> Within three months, the patient will demonstrate effective self-management of asthma symptoms, including proper use of medications, avoidance of triggers.</p>	<p>1.Facilitate proper positioning and breathing techniques.</p> <p>2.Encourage effective coughing and airway clearance techniques.</p> <p>3.Administer oxygen therapy as prescribed.</p> <p>4.Collaborate with the healthcare team to adjust medication regimen.</p> <p>5.Provide education on asthma triggers and management (Doenges, et al., 2008).</p>	<p>1.It helps optimize lung expansion, reduce airway resistance, and improve airway clearance.</p> <p>2.It assists in removing mucus and promoting better airway ventilation.</p> <p>3.It ensures adequate oxygenation and helps relieve respiratory distress.</p> <p>4.It ensures the patient receives appropriate pharmacological treatment based on their symptoms and response.</p> <p>5.It empowers the patient to make informed choices, avoid triggers, and better manage their condition, leading to improved symptom control and reduced exacerbations (Doenges, et al., 2008).</p>	<p>The goals are in progress.</p>
<p><b>Subjective data:</b> Verbalized concerns about exacerbations</p> <p><b>Objective data:</b> Increased heart rate.</p>	<p>Anxiety related to fear of asthma attacks and impaired breathing as evidenced by restlessness, increased heart rate, and verbalized concerns about exacerbations.</p>	<p><b>Short-term goal:</b> Within 24 hours, the patient will demonstrate reduced anxiety as evidenced by a decreased heart rate.</p> <p><b>Long-term goal:</b> Within three months, the patient will effectively manage anxiety related to asthma through the use of relaxation techniques.</p>	<p>1.Provide education on asthma management.</p> <p>2.Teach relaxation techniques.</p> <p>3.Provide emotional support.</p> <p>4.Collaborate with the healthcare team (Doenges, et al., 2008).</p>	<p>1.It empowers the patient to understand and manage their condition effectively.</p> <p>2.It promote a sense of calm during asthma-related episodes.</p> <p>3.It fosters a sense of understanding and reduces feelings of isolation, promoting overall emotional well-being.</p> <p>4.It ensures a coordinated approach to care and allows for adjustments to the treatment plan(Doenges, et al., 2008).</p>	<p>The goals are in progress</p>
<p><b>Objective data:</b> Wheezing, shortness of breath, and increased work of breathing</p>	<p>Ineffective Breathing Pattern related to airway constriction and impaired gas exchange as evidenced by wheezing, shortness of breath, and increased work of breathing.</p>	<p><b>Short-term goal:</b> Within 8 hours, the patient will demonstrate an improved breathing pattern as evidenced by decreased wheezing.</p> <p><b>Long-term goal:</b> Within three months, the patient will achieve effective management of their breathing pattern by</p>	<p>1.Position the patient for optimal breathing.</p> <p>2.Administer prescribed bronchodilators and other medications.</p> <p>3.Provide oxygen therapy as necessary.</p> <p>4.Encourage effective coughing and deep breathing exercises.</p>	<p>1.It enhance airway clearance and reduce the work of breathing.</p> <p>2.It helps relieve bronchospasm, open airways, and improve breathing patterns.</p> <p>3.It ensures adequate oxygenation and alleviates respiratory distress.</p> <p>4.It assists in clearing airways, promoting ventilation, and improving breathing patterns.</p>	

		implementing proper self-care measures.		
<b>Subjective data:</b> Verbalized lack of understanding, incomplete information, and ineffective self-care practices.	Deficient Knowledge related to the chronic condition and self-management as evidenced by verbalized lack of understanding, incorrect or incomplete information, and ineffective self-care practices.	<b>Short-term goal:</b> Within 24 hours, the patient will demonstrate improved understanding of their chronic condition as evidenced by accurate verbalization of key concepts.  <b>Long-term goal:</b> Within three months, the patient will effectively manage their chronic condition through accurate knowledge.	1. Provide disease-specific education.  2. Demonstrate self-care techniques.  3. Provide written educational materials.  4. Encourage questions and active participation.  5. Promote self-monitoring and self-management.	1. It helps the patient understand their chronic condition, its management, and the importance of self-care.  2. It allows the patient to visualize and practice the correct procedures.  3. It serves as a reference for the patient to review and reinforce the information provided.  4. It fosters a collaborative relationship between the patient and healthcare provider.  5. It empowers the patient to recognize changes in their condition, take appropriate actions, and seek timely medical assistance when necessary.

**Health Education:**

Health education for a patient with asthma is crucial to help them understand their condition, manage symptoms, and prevent exacerbations. Here are some key points to include in health education for a patient with asthma:

1. **Understanding Asthma:** Explain what asthma is, a chronic condition that causes inflammation and narrowing of the airways, leading to symptoms such as wheezing, coughing, shortness of breath, and chest tightness. Discuss the triggers that can worsen asthma symptoms, such as allergens (pollen, dust mites), respiratory infections, exercise, cold air, smoke, and certain medications (Smeltzer et al., 2010).

2. **Medication and Inhaler Technique:** Teach the proper use of asthma medications, including inhaled bronchodilators (reliever/rescue inhalers) and controller medications (inhaled corticosteroids). Demonstrate correct inhaler technique, emphasizing the importance of proper inhalation and coordination between pressing the inhaler and breathing in. Discuss the importance of adhering to the prescribed medication regimen, including timing and dosage (Smeltzer et al., 2010).

3. **Asthma Action Plan:** Explain the importance of having an asthma action plan, which is a written document that outlines personalized steps to manage asthma based on symptoms and peak flow measurements. Teach the patient how to monitor their peak flow using a peak flow meter and how to interpret the readings. Review the different zones (green, yellow, red) in the asthma action plan and what actions to take in each zone (Smeltzer et al., 2010).

4. **Trigger Avoidance:** Educate the patient about common asthma triggers and how to minimize exposure to them. Provide guidance on reducing exposure to allergens, such as using dust mite covers on bedding, regularly cleaning the house, and keeping pets out of the bedroom. Encourage the patient to avoid smoking and exposure to secondhand smoke (Smeltzer et al., 2010).

5. **Lifestyle Modifications:** Discuss the importance of maintaining a healthy lifestyle, including regular exercise, a balanced diet, and adequate sleep. Encourage the patient to engage in physical activities suitable for their condition and to use appropriate pre-exercise bronchodilators if needed. Emphasize the benefits of staying hydrated and managing stress, as stress can sometimes trigger asthma symptoms (Perneger et al., 2002).

6. **Recognizing and Managing Exacerbations:** Teach the patient to recognize early warning signs of asthma exacerbations, such as increased coughing, wheezing, shortness of breath, or decreased peak flow readings. Explain the steps to take when experiencing worsening symptoms, including using rescue medications, following the asthma action plan, and seeking medical attention if necessary (Perneger et al., 2002).

7. **Regular Follow-up and Communication:** Encourage the patient to attend regular follow-up appointments with their healthcare provider to monitor asthma control and adjust treatment if needed. Emphasize the importance of open communication with their healthcare provider to address any concerns or changes in symptoms ((Perneger et al., 2002).



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