

QUESTION

1. A patient with a long history of chronic obstructive pulmonary disease (COPD) is admitted to the hospital with an acute exacerbation. The patient is currently on a long-term low-dose inhaled corticosteroid and a long-acting beta₂-agonist. The patient's current symptoms include increased sputum production, dyspnea, and wheezing. The patient's oxygen saturation is 88% on room air. The patient's arterial blood gas (ABG) shows a pH of 7.35, a partial pressure of carbon dioxide (P_aCO₂) of 55 mmHg, a partial pressure of oxygen (P_aO₂) of 60 mmHg, and a bicarbonate (HCO₃⁻) of 30 mEq/L. The patient's chest X-ray shows hyperinflation and flattened diaphragms. The patient's physical examination shows hyperinflation of the chest, decreased breath sounds, and wheezing. The patient's vital signs are: temperature 38.0°C, heart rate 110 bpm, respiratory rate 22 breaths per minute, and blood pressure 140/90 mmHg. The patient's laboratory tests show a white blood cell count of 12,000/mm³ with 85% neutrophils. The patient's sputum culture is positive for *Pseudomonas aeruginosa*. The patient's current medications are: inhaled corticosteroid (fluticasone), long-acting beta₂-agonist (salmeterol), and oral antibiotic (amoxicillin-clavulanate). The patient's medical history includes COPD, hypertension, and type 2 diabetes mellitus. The patient's social history includes a 20-year history of smoking 1 pack of cigarettes per day. The patient's family history includes COPD and type 2 diabetes mellitus. The patient's current condition is a severe exacerbation of COPD with respiratory acidosis and hypercapnia. The patient's treatment plan includes: oxygen therapy, bronchodilators, corticosteroids, and antibiotics. The patient's nursing care includes: monitoring oxygen saturation, respiratory rate, and vital signs; administering medications; and providing patient education.

Parameter	Normal Range	Current Value
pH	7.35 - 7.45	7.35
P _a CO ₂	35 - 45 mmHg	55 mmHg
P _a O ₂	80 - 100 mmHg	60 mmHg
HCO ₃ ⁻	22 - 28 mEq/L	30 mEq/L
WBC	4,000 - 10,000/mm ³	12,000/mm ³
Neutrophils	40% - 70%	85%

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ANSWER



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