

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 55 mmHg, and a bicarbonate (HCO₃⁻) of 30 mEq/L. The patient's chest X-ray shows hyperinflation and flattened diaphragms. 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 is currently on oxygen therapy at 2 L per minute via nasal cannula. The patient's current medications include: inhaled corticosteroid, long-acting beta₂-agonist, and oral corticosteroid. The patient's current laboratory values are: white blood cell count (WBC) 12,000/mm³, hemoglobin (Hb) 12 g/dL, and hemoglobin A1c (HbA1c) 6.5%.

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	55 mmHg
HCO ₃ ⁻	22-28 mEq/L	30 mEq/L
WBC	4,000-10,000/mm ³	12,000/mm ³
Hb	12-16 g/dL	12 g/dL
HbA1c	<5.7%	6.5%

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ANSWER



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