

J.T., 74-year-old Hispanic male, came to the emergency department (ED) 7 days ago with complaints of shortness of breath. His wife stated that he has a history of hypertension, depression, and chronic obstructive pulmonary disease (COPD). The admission chest x ray revealed dense consolidation of the left lower lobe. An arterial blood gas (ABG) at that time showed pH 7.60, PaCO<sub>2</sub> 29, HCO<sub>3</sub> 32, and PaO<sub>2</sub> 75. He quickly deteriorated and required intubation. He has been in the intensive care unit for 3 days. JT has been married to his wife for 45 years and they live with a daughter and 2 grandchildren. JT and his wife speak English and Spanish. JT weighs 75kg

**Current Assessment and tests:**

BP 167/98, pulse 112, temp 102.3F, RR 144, O<sub>2</sub> sat 72%

Patient localizes to ETT and is intermittently opens eyes, making several attempts to pull ETT

Orally intubated with # 7.5 ETT, taped at 27 cm at teeth

Ventilator settings: Assist control (AC), Tidal volume (TV) 450, Rate 14, Fio<sub>2</sub> 60%, Peep 5 cm H<sub>2</sub>O

Breath sounds: decreased bases and bilateral crackles that do not clear after suctioning

Brown, yellow secretions returned with suctioning

Peripheral pulses weak with capillary refill greater than 4 seconds

2+ pitting edema in the bilateral lower extremities

ABG pH 7.31, PaCO<sub>2</sub> 58, HCO<sub>3</sub> 28, PaO<sub>2</sub> 54

Chest X-ray reveals diffuse white-out in middle and lower lobes; ETT present with tip above carina; left subclavian central venous catheter is located in the superior vena cava

1. Interpret JT's latest ABG's
2. Describe each of JT's ventilator settings and the rationale for the selection of each
3. After JT's ABG results the provider increases the PEEP from 5 cmH<sub>2</sub>O to 8cm H<sub>2</sub>O. Why would this be necessary and what is the expected outcome with this action?

