



Case Study 26

Name _____ Class/Group _____ Date _____

Group Members _____

► Scenario

P.R., a 66-year-old woman who has no history of respiratory disease, is being admitted to your intensive care unit (ICU) from the emergency department (ED) with a diagnosis of pneumonia and acute respiratory failure (ARF). The ED nurse tells you that P.R. was stuporous and cyanotic on her arrival to the ED. Her initial vital signs were 90/68, 134, 38, 101° F (38.3° C) with an SpO_2 of 53%. She was endotracheally intubated orally and placed on mechanical ventilation and has equal breath sounds. Her ventilator settings are synchronized intermittent mandatory ventilation of 12/min, tidal volume (V_T) 700 mL, FiO_2 0.50, positive end-expiratory pressure (PEEP) 5 cm H_2O . The nurse tells you P.R. had an initial chest x-ray (CXR) examination that confirmed the diagnosis of pneumonia, but she needs an additional CXR examination stat.

1. Describe the pathophysiology of ARF.
2. How does the underlying pathophysiology relate to P.R.'s presenting signs and symptoms?
3. Describe each of P.R.'s ventilator settings and the rationale for the selection of each.

-  4. Why does P.R. need a second CXR examination?

Chart View

Arterial Blood Gases (ABGs)

pH	7.28
Paco ₂	62 mm Hg
HCO ₃	26 mmol/L
Pao ₂	48 mm Hg
SpO ₂	53%

5. The ABG results from the sample drawn in the ED before intubation are sent to you. Interpret P.R.'s ABG results.
6. List eight collaborative care interventions that would be implemented for P.R. and the rationale for each.
7. What is your priority nursing goal at this time?

8. Describe six interventions you will perform over the next two hour based on this priority.
9. P.R. is not heavily sedated and seems anxious about all that is going on. Describe how you can help her.

Chart View

Arterial Blood Gases

pH	7.30
Paco ₂	52 mm Hg
HCO ₃	22 mmol/L
Pao ₂	70 mm Hg
Spo ₂	88%

10. ABGs are redrawn after P.R. has been on mechanical ventilation for 2 hours. What ventilator setting changes do you anticipate based on your interpretation of these values? Select all that apply, and explain your rationale.
- Increasing the PEEP to 10 cm
 - Increasing the rate on the ventilator to 16/min
 - Increasing the V_T to 850 mL
 - Changing to continuous mandatory ventilation

PART 1 MEDICAL-SURGICAL CASES

11. Evaluate each of the following statements about caring for P.R. or a similar patient receiving mechanical ventilation with an endotracheal tube (ETT). Enter *T* for true or *F* for false.

Discuss why the false statements are incorrect.

- 1. Administer muscle-paralyzing agents to keep P.R. from "fighting the vent."
- 2. Check ventilator settings at the beginning of each shift and then hourly.
- 3. When suctioning the ETT, each pass should not exceed 15 seconds.
- 4. Assign experienced nursing assistive personnel (NAP) to take vital signs every 2 to 4 hours.
- 5. Perform a respiratory assessment once per shift.
- 6. Empty excess water as it collects in the ventilation tubing back into the humidifier.
- 7. Keep a resuscitation bag at the bedside.
- 8. Monitor the cuff pressure of the ETT every 8 hours.
- 9. Keep ventilator alarms silenced when in the room to maintain a quiet environment.
- 10. Change the ventilator tubing every 12 hours.

12. You hear the high pressure alarm sounding on the mechanical ventilator and see that P.R.'s SaO_2 is 80%. What are the potential causes of this problem?

-  13. You determine that P.R. needs to be suctioned. Place in order the steps for safely performing in-line or closed suctioning.

- 1. Hyperoxygenate patient.
- 2. Use 5 to 10 mL of saline to rinse the catheter clear of secretions.
- 3. Insert catheter until resistance is met or patient coughs.
- 4. Assess patient's status and document procedure.
- 5. Put on clean gloves and face shield; attach suction.
- 6. Apply suction as you withdraw the catheter, not exceeding 10 seconds.
- 7. Reassess patient status and suction again as needed.

PART 1 MEDICAL-SURGICAL CASES

-  19. You plan to assess P.R.'s skin every 4 hours. What are four other strategies that will facilitate the expected outcome of maintaining skin integrity?