

## Case Study 31 Acute Respiratory Distress Syndrome

**Difficulty:** Advanced

**Setting:** Hospital

**Index Words:** acute respiratory distress syndrome (ARDS), medications, pain management, assessment, laboratory values, dysrhythmias, crisis management

**Giddens Concepts:** Clinical Judgment, Collaboration, Fluid and Electrolyte Balance, Gas Exchange, Oxygenation, Safety

**HESI Concepts:** Assessment, Clinical Decision Making—Clinical Judgment, Collaboration/Managing Care, Fluid and Electrolyte Balance, Gas Exchange, Oxygenation, Safety

### ► Scenario

G.S., a 56-year-old secretary, was involved in a motor vehicle accident; a car drifted left of the centerline and struck G.S. head-on, pinning her behind the steering wheel. She was intubated immediately after extrication and flown to your trauma center. Her injuries were found to be extensive: bilateral flail chest, right hemothorax and pneumothorax, fractured spleen, multiple small liver lacerations, open fractures of both legs, and probable cardiac contusion. She was taken to the operating room (OR) for repair of her injuries. In the OR she received 36 units of packed red blood cells (RBCs), 20 units of platelets, 12 units of fresh frozen plasma, and 18 L of lactated Ringer's solution. G.S. was admitted to the intensive care unit (ICU) postoperatively, where she developed acute respiratory distress syndrome (ARDS).

1. What is ARDS?
2. What are the risk factors for developing ARDS? Which does G.S. have?

### CASE STUDY PROGRESS

G.S. was in the ICU for 4 weeks, and her ARDS is almost resolved. She is being transferred to your unit. The ICU nurse gives you the following report: "She is awake, alert, and oriented to person and place. Both legs remain casted from hip to toe. She can wiggle her toes on both feet. Heart tones are clear, last vital signs were 138/90, 88, 26, 99.3° F (37.4° C); bilateral radial pulses 3+. All of her surgical incisions are healed. She has bilateral chest tubes to water suction with closed drainage, both dressings are dry and intact. She has a duodenal feeding tube, a Foley catheter to down drain, and a left double-lumen peripherally inserted central catheter (PICC) line. Her morning labs are still pending."


**PART 1 MEDICAL-SURGICAL CASES**

3. What additional information do you need from the ICU nurse?

**CASE STUDY PROGRESS**

You complete your assessment of G.S. You note she is dyspneic and has fine crackles throughout all lung fields posteriorly and in both lower lobes anteriorly, and coarse crackles over the large airways. She has oxygen on at 2 L per nasal cannula and her  $\text{SpO}_2$  is 94%.

4. What is the significance of the fine and coarse crackles?
5. The nurse from the previous shift charted the following statement: “Fine and coarse crackles that clear with vigorous coughing.” Based on your knowledge of pathophysiology, determine the accuracy of this statement.
6. It is time to administer scheduled furosemide (Lasix) 60 mg intravenous push (IVP). What effect, if any, should furosemide have on G.S.'s breath sounds?

-  7. What action do you need to take before giving the furosemide?

## PART 1 MEDICAL-SURGICAL CASES

### Chart View

#### Laboratory Results

Sodium	129 mmol/L
Potassium	3.0 mmol/L
Chloride	92
HCO <sub>3</sub> <sup>-</sup>	26 mmol/L
BUN <sup>3</sup>	37 mg/dL
Creatinine	2 mg/dL
Glucose	128 mg/dL
Calcium	7.1 mg/dL

8. Which laboratory values concern you, and why?
9. Given G.S.'s laboratory values, what action do you need to take and why?

### CASE STUDY PROGRESS

The physician wants you to administer the furosemide and prescribes the following.

### Chart View

#### Physician's Orders

STAT magnesium (Mg) level  
Potassium chloride (KCl) 40 mEq IVPB  
Calcium gluconate 2 g in 100 mL NS IVPB over 3 hr

10. Why did the physician order a magnesium level?
11. G.S. has one available port to use on the PICC line. Outline a plan for administering the potassium chloride and the calcium gluconate.

12. What interventions do you need to perform to safely administer intravenous (IV) potassium chloride? Select all that apply.
- Place G.S. on continuous electrocardiogram (ECG) monitoring.
  - Administer the infusion using an intravenous pump.
  - Assess the patency of the PICC line before initiating the infusion.
  - Administer the potassium infusion over a time period of at least 2 hours.
  - Invert the potassium-containing IV bag several times before and during the infusion.
13. You go to prepare G.S.'s furosemide dose and find only one 20-mg vial in the medication-dispensing system. The floor stock is empty. The pharmacist tells you that it will be at least an hour before he can send the drug to you. What are your options?
14. While you are administering the furosemide, G.S. says, "This is so weird. A couple times this morning, I felt like my heart flipped upside down in my chest, but now I feel like there's a bird flopping around in there." What are the first two actions you should take next?
15. G.S.'s pulse is 66 beats/min and irregular. Her blood pressure is 92/70 and respirations are 26. She admits to being "a little lightheaded" but denies having pain or nausea. Your co-worker connects G.S. to the code cart monitor for a "quick look." Interpret what you see.



**PART 1 MEDICAL-SURGICAL CASES**

16. Why is G.S. likely experiencing a dysrhythmia?

17. What will your next actions be?

**Chart View**

**Arterial Blood Gases (ABGs) on 6 L O<sub>2</sub> by Nasal Cannula (NC)**

pH	7.30
Paco <sub>2</sub>	59 mm
Pa	82 Hg
HCO <sub>3</sub>	36 mmol/L
Spo <sub>2</sub>	91%

18. You increase her oxygen to 6L and the physician orders a stat set of ABGs. How would you interpret G.S.'s ABGs?

19. What are your nursing priorities at this time?

20. Describe four interventions you will perform over the next few hours based on this priority.

21. You notice that G.S. looks frightened and is lying stiff as a board. How would you respond to this situation?

**CASE STUDY OUTCOME**

G.S.'s pulmonary status does not improve after administration of the furosemide and she continues to have frequent ventricular dysrhythmias despite the administration of the electrolytes. The physician transfers G.S. back to the ICU, where she is found to have a pulmonary embolus. Unfortunately, 1 week later she throws another embolus and all attempts at resuscitation fail.

