



Sepsis, Septic Shock and Multiple Organ Dysfunction Syndrome

Simulated Clinical Experience (SCE™) Overview

Location: Emergency Department and Intensive Care Unit

History/Information:

The patient is a 72-year-old gentleman who has been a resident of an area nursing home for the past 10 years because his family is no longer able to care for him due to his development of Alzheimer's disease. The nursing home was unable to contact his family, a daughter who rarely visits. The patient does have a living will. His medical and surgical history is fairly insignificant but is positive for mild hypertension for which he receives no medications. His blood pressure normally runs 140-160/90-95mmHg. His normal mental status is that he responds to his name and follows the routine of the extended care facility appropriately. He is normally able to feed and toilet himself, but on occasion he is incontinent of both urine and stool. The nurse at the nursing home reports that the patient had just completed a course of antibiotics for a urinary tract infection.

The patient was brought to the Emergency Department today due to increasing unresponsiveness over the past 24 hours. He now only responds to painful stimuli by groaning even though his eyes open spontaneously. He does not follow commands. Additionally his blood pressure has dropped to the low 100's/60. His skin is flushed and cool to touch and his respirations are 26 and slightly labored.

Healthcare Provider's Orders:

IV 0.9% NS 500mL IV bolus wide open, may repeat x2 if breath sounds are without rales and systolic blood pressure is below 90
CBC, Electrolytes, BUN and Creatinine, Urinalysis, Urine Culture and Sensitivity with gram stain, Sputum culture and sensitivity with gram stain, Arterial blood gas, Blood cultures x2, Lactate level STAT, Coagulation profile
Oxygen at 6LPM per nasal cannula, may titrate to maintain SpO₂ greater than 94%
Chest x-ray STAT
Insert urinary catheter
Cefotaxime 1g IVPB STAT
Acetaminophen 625mg rectal suppository for Temp greater than 38°C
Continuous ECG and SpO₂ monitoring
NPO
Bedrest

Learning Objectives

1. Uses patient history and assessment data in the early identification and management of patients at risk for or with sepsis, septic shock and multi-system organ dysfunction (ANALYSIS).
2. Formulates, prioritizes, and individualizes a plan of care based on assessment findings (SYNTHESIS).
3. Anticipates diagnostic orders and therapies including medications for the management of patients with sepsis, septic shock and multi-system organ dysfunction (COMPREHENSION).
4. Discusses the possible sequela and consequences of unrecognized and untreated sepsis (COMPREHENSION).
5. Evaluates and documents patient response to therapies and identifies follow-up intervention based on patient assessment data (EVALUATION).
6. Discusses the legal, ethical and moral implications of care delivery in the acute care setting and discusses the concept of medical futility (COMPREHENSION).
7. Identifies the emotional implications of patient death on healthcare personnel involved in the care delivery of a patient (SYNTHESIS).

Questions to Prepare for the Simulated Clinical Experience

1. Differentiate the following terms:
 - Systemic Inflammatory Response Syndrome (SIRS)
 - Sepsis
 - Severe sepsis
 - Septic shock
 - Multiple Organ Dysfunction Syndrome (MODS)
2. All forms of shock are characterized by what common phenomenon?
3. What class of bacteria is responsible for more than one half of the cases of septic shock? What are some common causes of this?
4. Explain why myocardial depression is almost always present in a patient with septic shock despite an initial rise in cardiac output.
5. Discuss the cascade of host inflammatory responses that produce the major detrimental effects seen in sepsis due to gram-negative bacteria.
6. What is early goal directed therapy in the management of sepsis?
7. Identify the treatment guidelines currently recommended for the management of sepsis and septic shock.
8. Discuss how the drug dobutamine affects cardiac output. Identify the nursing implications with the administration of this drug.
9. Discuss how norepinephrine works and its indications for use. Identify the nursing implications with the administration of this drug.
10. Discuss how drotrecogin alfa works and its indications for use. Identify the nursing implications with the administration of this drug.
11. Describe the concept of ScvO₂ monitoring. Identify the significance of abnormally high and low ScvO₂ readings.
12. Describe the nursing responsibilities in assisting with central line insertion.
13. Discuss the importance/rationale for central line placement in a patient with sepsis.
14. If a patient has no advanced directives and no immediate family to make a decision regarding his care, what options are available to the healthcare team? Discuss if you feel this patient should or should not be a full code blue. Defend your position.

References

- Bridges, E. and Dukes, M. (2005). Cardiovascular aspects of septic shock: Pathophysiology, monitoring, and treatment. *Critical Care Nurse*, 25, 14-41.
- Dolan, S. (2003). Severe sepsis-a major challenge for critical care. *Intensive and Critical Care Nursing*, 19, 63-67.
- Gay, P., Lalla, P., Loe, M., Bell, A., Nicholson, M. and Villaruel, E. (2002). Understanding sepsis: From SIRS to septic shock. *Dynamics the Official Journal of the Canadian Association of Critical Care Nurses*, 13, 17-26.
- Joanna Briggs Institute for Evidence Based Nursery and Midwifery. (2005). *Best practice: Vital signs*, 3(3). Retrieved May 30, 2005 from http://www.joannabriggs.edu.au/best_practice/bp8.php
- Kleinpell, R. (2003). The role of the critical care nurse in the assessment and management of the patient with severe sepsis. *Critical Care Nursing Clinics of North America*, 15, 27-34.
- McGee, S. (2007). *Evidence-based physical diagnosis* (2nd ed.). Philadelphia: Saunders.
- Rady, M., Rivers, E. and Nowak, R. (1996). Resuscitation of the critically ill in the ED: Responses of blood pressure, heart rate, shock index, central venous oxygen saturation, and lactate. *American Journal of Emergency Medicine*, 14, 218-225.
- Rivers, E. P., Ander, D. S. and Powell, D. (2001). Central venous oxygen saturation monitoring in the critically ill patient. *Current Options in Critical Care*, 7, 204-211.
- Rivers, E., Nguyen, B., Havstad, S., Ressler, J. and Muzzin, A. (2001). Early goal directed therapy in the treatment of severe sepsis and septic shock. *New England Journal of Medicine*, 345, 1368-1370.
- Schulman, C. and Hare, K. (2003). New thoughts on sepsis. *Dimensions of Critical care Nursing*, 22, 20-30.
- Sommers, M. (2003). The cellular basis of septic shock. *Critical Care Nursing Clinics of North America*, 15, 13-25.
- Springhouse. (2007). *Best practices: A guide to excellence in nursing care* (2nd ed.). Philadelphia: Lippincott