General Surgery Small Group Activity

Curriculum for Antimicrobial Stewardship

Objectives:

At the completion of this small group activity, the learner should be able to:

1. Describe the appropriate duration of antibiotic prophylaxis in surgical patients
2. Distinguish colonization and/or culture contamination from infection
3. Locate treatment guidelines for sepsis and apply the guidelines to specific cases
4. Describe when and how antimicrobial de-escalation should occur
5. Describe the role of procalcitonin levels in antimicrobial stewardship

Case Scenario #1: You are in the pre-operative assessment clinic seeing Ms. Williams, a 40-year-old female who is scheduled to undergo a laparascopic cholecystectomy. She has a history of morbid obesity, hypertension, and diabetes mellitus. She has no known drug allergies. The anesthesia resident, Dr. Ana, asks you what antibiotics you would like Ms. Williams to have in the operating room for antimicrobial prophylaxis. You prescribe cefoxitin. Dr. Ana then asks if you would like cefoxitin written on the post-operative orders as well. What is your reply?

Case Scenario #2: You are seeing Mr. Swanson in the plastic surgery hospital follow-up clinic. Mr. Swanson is a 48-year-old quadriplegic male who has a stage 3 sacral decubitus ulcer. The patient has undergone two incision and drainage procedures in the past year, but still has difficulty with wound healing. The patient states that his dressings are changed every other day and that he is often left on his back for 12 hours at a time in his nursing home and is rarely turned or repositioned. The patient notes a foul odor when his dressings are changed, but denies any fevers or chills. You see that during his last clinic visit, a wound culture was obtained. You see that the culture was positive for alpha-hemolytic Streptococci, *Proteus mirabilis*, and *Enterococcus faecalis*. On physical exam, he is afebrile. His ulcer site shows purulent material when the dressing is removed. There is minimal surrounding erythema. What treatment would you recommend for this patient?

<u>Case Scenario #3:</u> You are called to see Mr. Crest, a 72-year-old male, who is being admitted to the General Surgery service with fevers and severe left lower quadrant abdominal pain. A CT scan performed in the Emergency Department revealed diverticulitis with a 5-cm pericolonic abscess. Shortly thereafter, the patient becomes hypotensive and tachycardic. Physical examination reveals a temperature of 102.5°F, blood pressure of 80/46 mmHg, pulse of 133 and a rigid abdomen. In addition to immediate IV fluid resuscitation, what should be done for this patient?

<u>Case Scenario #4:</u> You are in the General Surgery outpatient clinic seeing Ms. Anderson, a 42-year-old female. She underwent small bowel resection for severe Crohn's disease and now has short bowel syndrome. She was recently started on Total Parenteral Nutrition (TPN) through a Port-a-cath. In addition to a basic metabolic panel, two blood cultures were obtained from the Port-a-cath during a recent home health visit. One of the two blood cultures is growing gram-positive cocci. Ms. Anderson is concerned that her catheter will need to be removed. What additional information would you like to know in order to address her concerns?

<u>Case Scenario #5:</u> Mr. Woods is a 52-year-old male who was admitted to the trauma surgery service 3 days ago after a motor vehicle accident where he was the restrained driver in a T-bone collision. He sustained multiple rib fractures of his left chest, a pneumothorax and pulmonary contusion. On admission, he was febrile to 101.5°F and hypotensive. Broad-spectrum antibiotic therapy was started with piperacillin-tazobactam and vancomycin due to concern of pneumonia and septic shock. The patient was intubated, mechanically ventilated and a chest tube was placed. His blood pressure has stabilized and his fever curve is improved, although he has intermittent low-grade fevers. His oxygen requirements are stable and blood culture and respiratory cultures are negative. Your senior resident notifies you that his serum procalcitonin level is normal and asks you what you want to do with his antibiotics.

Resources:

- Bratzler DW and Houck PM for the Surgical Infection Prevention Guidelines Writers Workgroup. Antimicrobial Prophylaxis for Surgery: An Advisory Statement from the National Surgical Infection Prevention Project. *Clinical Infectious Diseases* 2004; 38:1706–15.
- Mermel LA, Allon M, Bouza E, Craven DE, Flynn P, O'Grady NP, Raad II, Rijnders BJA, Sherertz RJ, Warren DK. Clinical Practice Guidelines for the Diagnosis and Management of Intravascular Catheter-Related Infection: 2009 Update by the Infectious Diseases Society of America. *Clinical Infectious Diseases*. (2009) 49 (1): 1-45. Also available at: www.idsociety.org
- Hayashi Y and Paterson DL. Strategies for Reduction in Duration of Antibiotic Use in Hospitalized Patients. *Clinical Infectious Diseases.* 2011;52(10):1232-40.
- Dellinger RP, Levy MM, Carlet JM, et. al: Surviving Sepsis Campaign: International guidelines for management of severe sepsis and septic shock. *Critical Care Medicine* 2008; 36:296-327. [published correction appears in *Critical Care Medicine* 2008; 36:1394-1396].