Internal Medicine Small Group Activity

Curriculum for Antimicrobial Stewardship

Objectives:

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

1. Define asymptomatic bacteriuria
2. Describe the patients for whom screening and treatment of asymptomatic bacteriuria is appropriate
3. Locate and interpret local antibiogram data
4. Discuss the concept of appropriate antibiotic de-escalation

Case Scenario #1: You are on the General Medicine inpatient service admitting Mrs. Jones, a 62-year-old female, to your hospital. You are called to admit her for management of a congestive heart failure exacerbation. While you are evaluating her, you find that a urinalysis was obtained while the patient was in the Emergency Department. The urinalysis was positive for leukocyte esterase and 5-10 white blood cells. A urine gram stain was performed and showed 1+ white blood cells and many gram-negative rods. In addition to initiating appropriate treatment for her congestive heart failure, how should you proceed with regards to her urinalysis results?

Case Scenario #2: You are in the Internal Medicine pre-operative assessment clinic seeing Mr. Jackson, a 73-year-old male with benign prostatic hypertrophy, chronic obstructive pulmonary disease, hypertension and coronary artery disease who is scheduled to undergo transurethral resection of the prostate (TURP). He states that he has been feeling well and denies fevers, chills or any new urinary symptoms. Would you perform a urinalysis and culture in this patient? If so, why?

<u>Case Scenario #3:</u> You are in the Internal Medicine outpatient clinic seeing Ms. Brown, a 44-year-old female. She began to experience fevers to 103°F, flank pain, nausea and vomiting yesterday and is now unable to keep down anything she takes by mouth. She has costovertebral angle tenderness on physical examination. Her urinalysis is positive for leukocyte esterase and reveals 20-40 white blood cells. She has no medication allergies and is otherwise healthy. You diagnose Ms. Brown with acute pyelonephritis and would like to start her on ceftriaxone 1gm IV q 24 hours. However, your upper level resident asks you if intravenous ciprofloxacin might also be a reasonable choice for empiric antimicrobial therapy in this patient. What information do you need to know in order to answer this question? How can you find this information?

<u>Case Scenario #4</u>: You are starting on the inpatient General Medicine service and are assuming care of Ms. Smith, an 84-year-old female who was initially admitted from an assisted living facility for respiratory failure due to a pulmonary embolus. She has had a prolonged hospitalization, but was weaned from the ventilator and is no longer hypoxic. She still has an indwelling foley catheter in place. During her hospitalization, she developed a fever. Blood cultures, a chest x-ray and a urinalysis with culture were obtained. The urinalysis revealed leukocyte esterase and 20-40 white blood cells. She was started empirically on intravenous piperacillin-tazobactam. A chest x-ray was obtained and showed no acute cardiopulmonary disease. 72 hours later, her fever has resolved. Her blood cultures are negative. Her urine culture shows 10^5 cfu/ml of *K. pneumoniae* sensitive to piperacillin, piperacillin-tazobactam, ceftriaxone, cefepime, meropenem, ciprofloxacin and tobramycin, but resistant to TMP/SMX (Bactrim). She has no allergies. You anticipate that she will be discharged to a skilled nursing facility within the next 48 hours. What changes, if any, should be made to her antimicrobial regimen? Why?

<u>Scenario #5:</u> You are in the General Medicine outpatient clinic seeing Ms. Johnson. She is a 96-year-old nursing home resident. The nursing home staff reports malodorous urine as well as altered mental status, which has steadily worsened over the past two days. She is afebrile and has not had any other focal symptoms. Her urinalysis is positive for leukocyte esterase and many bacteria with 20-40 white blood cells. What is the most appropriate next step in her management?

Resources:

- Nicolle LE, Bradley S, Colgan R, Rice JC, Schaeffer A, Hooton TM. Infectious Diseases Society of America Guidelines for the Diagnosis and Treatment of Asymptomatic Bacteriuria in Adults. Published in: *Clinical Infectious Diseases* 2005; 40:643–54. Also available at www.idsociety.org
- Gupta K, Hooton TM, Naber KG, Wullt B, Colgan R, Miller LG, Moran GJ, Nicolle LE, Raz R, Schaeffer AJ, Soper DE. Guidelines for Antimicrobial Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women. Published in: *Clinical Infectious Diseases* 2011; 52:e103-e120. Also available at www.idsociety.org
- Hooton TM, Bradley SF, Cardenas DD, Colgan R, Geerlings SE, Rice JC, Saint S, Schaeffer AJ, Tambayh PA, Tenke P, Nicolle LE. Diagnosis, Prevention, and Treatment of Catheter-Associated Urinary Tract Infection in Adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. Published in: *Clinical Infectious Diseases* 2010; 50:625-663. Also available at www.idsociety.org
- Woodford HJ, George J. Diagnosis and Management of Urinary Tract Infection in Hospitalized Older People. *Journal of the American Geriatrics Society* 2009;57:113-49
- Rituparna D, Towle V, Van Ness PH, Juthani-Mehta M. Adverse Outcomes in Nursing Home Residents with Increased Episodes of Observed Bacteriuria. *Infection Control and Hospital Epidemiology* 2011;32(1):84-6