

February 16, 2018

Rena Lynn Fection is a 16yo female presenting with dysuria, abdominal pain, back pain, nausea, and vomiting. She also discloses that she is sexually active with one male partner and they do not consistently use condoms.

Vital signs: 39.0 C, HR 113, RR 18, BP 129/78

Exam: suprapubic and costovertebral angle tenderness but without cervical motion tenderness, discharge, or genital lesions. The rest of the exam was WNL.

Labs: WBC 17.2, UA +nitrite/leukocytes, UCx +10⁵ gram negative rods (speciation and sensitivities pending). Hb and electrolytes show no abnormalities.

Of the following, the most appropriate inpatient antibiotic regimen for this patient is:

- A. Ceftazidime
- B. Ceftriaxone
- C. Vancomycin
- D. Ampicillin
- E. Nitrofurantoin

B. Ceftriaxone

This is the best choice for empiric inpatient antibiotic therapy as it covers the most common bacterial etiologies of pyelonephritis. *Escherichia coli* accounts for over 75% of community-acquired cases, most of which should be susceptible to ceftriaxone. Other etiologies include *Proteus* spp., *Klebsiella pneumoniae*, and group B Strep or *Staphylococcus saprophyticus*; the latter typically in young women. Unusual etiologies, seen primarily in immunocompromised and/or hospitalized populations, include *Pseudomonas aeruginosa* and *Enterococcus* spp.

Ceftazidime provides good gram negative coverage, but is overly broad because *pseudomonas* is an uncommon cause of UTI in women of child bearing age.

Vancomycin is a poor choice because common organisms like *E.coli* would not be covered. *Stapholococcus aureus* generally only occurs in patients with stents or chronic indwelling catheters.

Ampicillin alone or in combination with sulbactam is unreliable for coverage of *E.coli* and other *Enterobacteriaceae*.

Nitrofurantoin should be avoided in the setting of presumed upper urinary tract disease due to its inability to accumulate adequate levels within renal parenchyma. It is, however, a great choice for simple cystitis.