

**Hospital: Odessa (Odessa, WA)**

**Presenter: James Hendrix-Ward, PharmD**

Question/case summary:

To my knowledge, azithromycin is not a first-line (or 2nd or 3rd-line) agent for treatment of UTI. Patient case describes a symptomatic UTI treated successfully with azithromycin due to the patient reporting allergies to all major antibiotic classes. Our question is about the utility of azithromycin in UTI; does it concentrate well in urine, are there significant precautions or drawbacks for using it in UTI, etc. Any insight into this case and discussion of macrolides as a class would be greatly appreciated!

**UW TASP Recommendations:**

Azithromycin is mainly active against Gram-positive organisms, especially Streptococcus species, though resistance is on the rise (*Streptococcus pneumoniae* specifically). Azithromycin does have some Gram-negative coverage, including against *Haemophilus influenzae*, *Moraxella catarrhalis*, *Neisseria gonorrhoeae*; and other atypical microorganism coverage like *Chlamydia pneumoniae*, *Chlamydia trachomatis*, *Mycoplasma pneumoniae*, and non-tuberculosis mycobacteria.

Azithromycin is mainly a respiratory agent for community acquired pneumonia (CAP), acute infective exacerbation of chronic obstructive pulmonary disease (COPD), and pertussis. It is a corner-stone therapy for Mycobacterium avium complex (MAC) along with ethambutol and rifabutin. It also has a role in the treatment of sexually transmitted disease such as chlamydia and gonorrhea. Azithromycin is minimally excreted by the kidney, with renal excretion of about 5-12%. It may have some in vitro activity for Enterobacteriaceae, but typical MIC90 for E. coli ranges between 4-16 mcg/mL, and there are no susceptibility breakpoints established by CLSI or FDA. Given that the predominant pathogen of UTI is E. coli, it is unclear whether if azithromycin would be effective. It is not indicated in UTI as it has not been studied in the setting of UTI.

The elimination of azithromycin is a biphasic process, exhibiting a short tissue distribution phase followed by a longer elimination phase. After the first dose, the half-life ranges between 11 to 14 hours, and the half-life increases to 35-40 hours with multiple dosing.

Additionally, for patients like this, getting a formal assessment by an Allergist prior to the next UTI seems important.

On behalf of the UW TASP Specialist Team:

*John Lynch, MD MPH*

*Chloe Bryson-Cahn, MD*

*Jeannie Chan, PharmD*

*Zahra Kassamali Escobar, PharmD*

*Rupali Jain, PharmD*

*Paul Pottinger, MD FIDSA*

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