CHOICEPHARMD

**Name:** Sample patient
**DOB:** 1/1/2000
**Gender:** Female
**Facility:** Sample Facility
**Provider:** Sample Physician
**Allergies/Notes:** PCN

## Panel: Urine

**Sample ID:** 1234
**Collection Date:** 7/5/2024
**Reported Date:** 7/6/2024

## DETECTED PATHOGENS

| | | | |
|---|---|---|---|
| **Escherichia coli** | **Detected - High** | **> $10^6$ copies/uL** | *Gram-negative organism, may be responsible for urinary tract infection. Most common UTI pathogen.* |
| **Klebsiella oxytoca** | **Detected - Medium** | **$10^4$-$10^6$ copies/uL** | *Gram-negative organism(s), may be responsible for urinary tract infection.* |
| **Ureaplasma parvum** | **Detected - Low** | **< $10^4$ copies/uL** | *May be part of normal genital flora in healthy subjects. Associated genitourinary disease may include nongonococcal urethritis, epididymitis, prostatitis, and pregnancy related disorders. Data establishing Ureaplasma spp as an etiologic agent is inconsistent. Disease may be caused by multiple microorganisms simultaneously. Treatment may be considered with high organism load or if Ureaplasma spp is the sole organism detected. Active treatment agents include doxycycline, azithromycin, and levofloxacin.* |

## DETECTED RESISTANCE GENES

| | | |
|---|---|---|
| **CTX-M** | **Detected** | *Extended Spectrum Beta-lactamase (ESBL): Confers resistance to penicillins, penicillin-BLI combinations, most cephalosporins, aztreonam. Expressed only by select gram-negative organisms.* |

*Pathogens with low microbial load may be considered clinically insignificant and generally do not warrant treatment. Treatment for low microbial load may be considered in males, patients with recurrent UTIs, catheter-associated UTIs, or for samples collected from alternate sites (e.g. nephrostomy tubes). Provider discretion is advised.*

## PHARMD TREATMENT CONSIDERATIONS

***Regimens based on organisms most likely to be pathogenic. Microbial load considered when available.***

| Medication | Dose/Duration | Renal Adjustment | Considerations |
|---|---|---|---|
| Fosfomycin (Monurol) | **Cystitis:** 3 g PO x 1 dose (x 3 doses every 48-72 hrs for complicated cystitis)<br>**Pyelonephritis:** Avoid use | None | **Coverage for: Escherichia coli, Klebsiella oxytoca**<br>• $31-51 for treatment course (coupon pricing)<br>• May repeat dosing every 48-72 hrs up to a total of 1-3 doses |
| **OR** | | | |
| Nitrofurantoin (Macrobid) | **Cystitis:** 100 mg PO BID x 5 d (7 d for complicated cystitis)<br>**Pyelonephritis:** Avoid use | Avoid use in pts with CrCl < 30 mL/min | **Coverage for: Escherichia coli*, Klebsiella oxytoca***<br>• $16-21 for 7 day course (coupon pricing) |
| **OR** | | | |
| TMP/SMX (Bactrim, Septra) | **Cystitis:** 160/800 mg PO BID x 3 d (7 d for complicated cystitis)<br>**Pyelonephritis:** 160/800 mg PO BID x 10-14 d | CrCl 15-30 mL/min: 80/400 mg PO BID<br>CrCl < 15 mL/min: Use not recommended | **Coverage for: Escherichia coli*, Klebsiella oxytoca***<br>• $15-28 for 7 day course (coupon pricing)<br>• May cause hyperkalemia (caution with ACEi, ARBs, ARAs)<br>• Avoid in sulfa allergy |
| **OR** | | | |
| Ciprofloxacin (Cipro) | **Cystitis:** 500 mg PO BID x 3 d (5-7 d for complicated cystitis)<br>**Pyelonephritis:** 500 mg PO BID x 7-10 d | CrCl 30-50 mL/min: 250-500 mg PO every 12 hrs<br>Crcl 5-29 mL/min: 250-500 mg PO every 18-24 hrs | **Coverage for: Escherichia coli*, Klebsiella oxytoca***<br>• $13-18 for 5 day course (coupon pricing)<br>• FQ class-wide warnings include: CNS toxicity, peripheral neuropathy, myasthenia gravis, aortic dissection, tendinopathy, QT interval prolongation, C.difficile colitis |
| **OR** | | | |

| Medication | Dose/Duration | Renal Adjustment | Considerations |
|---|---|---|---|
| Ertapenem (Invanz) | **Cystitis:** 1 g IV/IM daily x 3 d (7 d for complicated cystitis) **Pyelonephritis:** 1 g IV/IM daily x 10-14 d | CrCl < 30 mL/min: 500 mg IV/IM daily | **Coverage for: Escherichia coli, Klebsiella oxytoca**<br>• $120-354 for 7 day course (coupon pricing)<br>• Safe to use in most PCN allergies (~1% cross-reactivity)<br>• Adjust dose to 1.5 g daily in obesity |

* Displays variable activity vs pathogen

## Resistance Genes

SHV, TEM, CTX-M (ESBLs) confer resistance to penicillins, penicillin-BLI combinations, most cephalosporins, and aztreonam. Fosfomycin displays positive activity (+) vs ESBL-producing E. Coli and Klebsiella spp. Nitrofurantoin, TMP/SMX, and fluoroquinolones display variable activity (±) and may be considered for mild disease (e.g. uncomplicated cystitis). Treatment with carbapenems (e.g. ertapenem) may be warranted for moderate-severe disease (cUTI, pyelonephritis). Culture and sensitivity may be considered in order to determine definitive activity.

## Additional Considerations

Complicating factors include: Male patients, pregnant women, obstruction, immunosuppression, renal failure, renal transplantation, urinary retention from neurologic disease, uncontrolled diabetes, and individuals with risk factors that predispose to persistent or relapsing infection (e.g., calculi, indwelling catheters or other drainage devices). For males in which acute prostatitis is suspected, fluoroquinolones and TMP/SMX are preferred due to reliable penetration of prostatic tissue.

Reviewed by: John PharmD (PS12345) Date: 7/6/2024

The following regimen(s) are based on generally accepted and peer-reviewed antimicrobial activity of specific agents against detected pathogens, resistance genes, and presumed diagnosis based on specimen source and resulting pathogens. Medication selection, dosages, durations, and considerations are in congruence with clinical practice guidelines (IDSA, CDC, AAP, etc), when guidance is available. Additional patient factors including but not limited to HPI, comorbidities, concomitant medications, etc. should be carefully evaluated in conjunction with listed treatment considerations. Clinical correlation and appropriate medical judgment is warranted prior to prescribing a course of treatment.

Have a question about a report? Scan the QR code to chat with a pharmacist or call 904-618-3554.

Disclaimer: Treatment considerations and therapeutic guidance is generated by ChoicePharmD, LLC and is not affiliated with the testing laboratory.