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## Antimicrobial Stewardship: Molecular Lab Result

Powered by  open laboratory solutionsReport ID  
DEMO-07Specimen Type  
Urine clean catch boric acidPatient  
John DoeProvider  
Dr. DemoDOB  
1/09/1942Resulted  
8/26/2026, 6:05:00 PMCollected  
8/26/2026, 9:15:00 AMReceived  
8/26/2026, 1:40:00 PM

## Infection Complexity



## Organisms Detected

- Klebsiella pneumoniae

## Resistance Detected

- Extended-Spectrum Beta-Lactamase

## Antimicrobial Resistance



## Allergies

- Penicillin

## Interactions

## MAJOR

3

- Anticonvulsants
  - Uricosurics
- (representative · scan QR)



Full interactions list

Scan or click

## Infection Control

Contact: K. pneumoniae

## #1 RECOMMENDED TREATMENT PLAN

## Ertapenem

Brand: Invanz

Carbapenem

Extended

**Dose: 1 g IV/IM QD for 7 days if clinically improving labeled for this site; guideline duration****Allergy cross-reactivity caution: beta-lactam allergy on file — ertapenem (carbapenem) has a LOW, side-chain-dependent cross-reactivity (penicillincephalosporin <5%/generation; carbapenem <=1%). Verify tolerability; not auto-suppressed.**

DOSE ADJ: RENAL

Est. \$301/7d

Current Pricing

## Drug Selection Basis

FDA

Selected per FDA-approved indications for this site

## CLINICAL RATIONALE

Ertapenem was selected to cover Klebsiella pneumoniae as a recommended intravenous agent. Resistance markers compromise 1 drug class: Extended-Spectrum Beta-Lactamase.

## WHEN SHOULD THIS BE TREATED? ‡

Do not treat asymptomatic bacteriuria unless before a urologic procedure. This assay cannot tell bladder-confined cystitis from prostatic or upper-tract infection — judge on the clinical picture (fever, flank tenderness, obstruction), and exclude acute prostatitis before treating a man as uncomplicated; a non-tender prostate does not exclude it. Reserve the cystitis option for bladder-confined disease; otherwise use a systemically active agent from the ranked list. If acute bacterial prostatitis is suspected, treat for at least 14 days.

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\* Printed doses are standard adult regimens, or the weight-based pediatric/neonatal dose when a pediatric age and weight are provided (a per-kg guideline plus a computed absolute for the supplied weight where pediatric/neonatal dosing data exist). All doses assume normal renal and hepatic function — the report flags where renal or hepatic adjustment may be needed but does not calculate that adjustment; resistance varies, so confirm dosing for the individual patient. ‡ Guidance is limited to the detected panel targets for the reported specimen plus any clinical details supplied, and is not a substitute for full clinical assessment. "First-line" and "alternative" denote this report's ranked recommendation for the detected organism and specimen source, not an endorsement by an outside body; the Drug Selection Basis panel states the evidence class behind that ranking. § Pricing is an estimate based on national-average wholesale benchmarks and may differ from actual acquisition cost. Recommendations are derived from freely available, peer-reviewed literature and U.S. government and professional-society guidance. Interpretive recommendations are generated by decision-support software from Open Laboratory Solutions, LLC, validated for clinical use by this laboratory; not FDA cleared/approved; CLIA regulated.

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## ALTERNATIVE TREATMENTS

| #                                                                                                                                                                                                                 | Drug (Generic / Brand)                  | Class                    | Dose                                                             |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------------|------------------------------------------------------------------|---------------------|
| #2                                                                                                                                                                                                                | Trimethoprim-sulfamethoxazole / Bactrim | Sulfonamide<br>Moderate  | 1 DS tab (160/800 mg) PO Q12H for 7 days if clinically improving | ~\$0.73/7d Ref.     |
| An extended-spectrum beta-lactamase was detected. Trimethoprim-sulfamethoxazole is a guideline option for Klebsiella pneumoniae only where susceptibility is confirmed by testing; do not rely on it empirically. |                                         |                          |                                                                  |                     |
| #3                                                                                                                                                                                                                | Meropenem / Merrem                      | Carbapenem<br>Extended   | 1 g IV Q8H for 7 days if clinically improving                    | ~\$78.88/7d Current |
| DOSE ADJ: RENAL                                                                                                                                                                                                   |                                         |                          |                                                                  |                     |
| #4                                                                                                                                                                                                                | Levofloxacin / Levaquin                 | Fluoroquinolone<br>Broad | 750 mg PO Q24H for 5 days                                        | ~\$1.25/7d Current  |
| DOSE ADJ: RENAL                                                                                                                                                                                                   |                                         |                          |                                                                  |                     |
| An extended-spectrum beta-lactamase was detected. Levofloxacin is a guideline option for Klebsiella pneumoniae only where susceptibility is confirmed by testing; do not rely on it empirically.                  |                                         |                          |                                                                  |                     |

## CLINICAL WARNINGS

| SEVERITY             | CLASS / AGENTS                  | KEY RISKS                                                                                                                                                                                                                                                                                                                                                                                                                                       | ACTION                                                                                                                                                                                                                                                                                                              |
|----------------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FDA Boxed<br>Age >60 | Fluoroquinolone<br>levofloxacin | <ul style="list-style-type: none"><li>Tendinitis and tendon rupture - increased over age 60 and with concurrent corticosteroids</li><li>Aortic aneurysm and dissection - increased rate reported, particularly in elderly patients</li></ul>                                                                                                                                                                                                    | Use with caution in older adults. See the FDA Boxed Warnings section of this report.                                                                                                                                                                                                                                |
| AGS Beers<br>Avoid   | trimethoprim-sulfamethoxazole   | <ul style="list-style-type: none"><li>Increased risk of hyperkalemia when used concurrently with an ACEI, ARB, or ARNI in presence of decreased CrCl.</li><li>Increased risk of worsening of kidney function and hyperkalemia; risk of hyperkalemia especially prominent with concurrent use of an ACEI, ARB, or ARNI.</li><li>With warfarin: Increased risk of bleeding</li><li>With phenytoin: Increased risk of phenytoin toxicity</li></ul> | USE WITH CAUTION in patients on ACEI, ARB, or ARNI and decreased CrCl. Risk of hyperkalemia especially prominent with concurrent RAS inhibitors. Reduce dosage if CrCl is 15-29 mL/min. Avoid if CrCl <15 mL/min. With warfarin: avoid when possible; if used together, monitor INR closely. With phenytoin: avoid. |



## FDA BOXED WARNINGS

## FLUOROQUINOLONE

Serious adverse reactions including tendinitis, tendon rupture, peripheral neuropathy, central nervous system effects and exacerbation of myasthenia gravis. Fluoroquinolones have been associated with disabling and potentially irreversible serious adverse reactions...



Levofloxacin

Scan/click: full FDA label

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## INTERPRETIVE NOTES

### RESISTANCE INTERPRETATION

**Extended-Spectrum Beta-Lactamase (ESBL)** detected (a CDC Serious Threat). Standard cephalosporins (ceftriaxone, cefazolin, ceftazidime) and aztreonam are expected to be ineffective. Preferred: carbapenems (ertapenem non-severe, meropenem severe) or a BL/BLI combination (ceftazidime-avibactam). Consider infection-control measures. Agents named in this section that do not appear in the recommendations above were omitted for this organism, specimen type, or detected resistance.

**PLANNED STEP-DOWN:** lead with the carbapenem while susceptibility is unknown. If culture shows the isolate susceptible to TMP-SMX or a fluoroquinolone, step down when improving and taking oral medication. Individualize with catheter, sepsis, immunocompromise, severe renal impairment or urinary tract abnormality.

**Trimethoprim-sulfamethoxazole** is a two-component combination, and resistance to it is driven predominantly by trimethoprim-targeting (dfr) determinants rather than by the sulfonamide component alone. No trimethoprim determinant was detected on this specimen, so these results do not establish whether trimethoprim-sulfamethoxazole is active against the organisms treated here. Confirm activity by culture with susceptibility testing.

This report **does not establish** whether ertapenem is active against the organisms treated here; the ranking reflects the organisms identified and published susceptibility patterns for them, not testing of this patient's isolate. If therapy is given, this is not a reason to broaden it. If an isolate is recovered, susceptibility testing answers this directly.

### DRUG-USE CAUTIONS

If treating as a complicated UTI / pyelonephritis with oral **TMP-SMX**: current complicated-UTI guidance lists TMP-SMX, with fluoroquinolones, as an oral option for complicated UTI without sepsis, noting it is less well studied than fluoroquinolones. Because this PCR result carries no susceptibility, confirm susceptibility on culture before relying on it — TMP-SMX resistance among U.S. outpatient urinary E. coli exceeded 20% in a national survey covering 2000 to 2010. Do NOT use TMP-SMX against a reported sulfonamide-resistance gene, and choose an agent with reliable activity from the ranked recommendations if susceptibility cannot be established promptly. Duration 7 days if clinically improving.

### ADDITIONAL CONSIDERATIONS

Patient **allergy** on file: PENICILLIN. Cross-reactivity caution (low cross-reactivity risk — verify tolerability, not auto-suppressed): meropenem, ertapenem.

## SPECIAL CONSIDERATIONS ‡

### **Klebsiella pneumoniae**

K. pneumoniae is intrinsically resistant to ampicillin (chromosomal SHV-1). An ESBL was detected: penicillins and cephalosporins are unreliable; a carbapenem is first-line for serious ESBL infection outside the urinary tract. Base UTI therapy on the ranked, susceptibility-reconciled recommendations above, which distinguish uncomplicated cystitis from complicated or upper-tract (pyelonephritis) disease.

**Intrinsic Resistance:** Penicillin (ampicillin)

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