

# Antimicrobial Stewardship Matters

Antimicrobial Stewardship | April 2026

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## A new approach to low-risk AmpC-producing organisms: An opportunity to break free of dogma

### At a Glance:



- AmpC-producing organisms are now classified into low- and moderate-risk for inducible 3<sup>rd</sup> generation cephalosporin and piperacillin-tazobactam (pip-tazo) resistance.
- Low-risk organisms (*Serratia marcescens*, *Providencia* spp., and *Morganella morganii*) can now be treated with ceftriaxone or pip-tazo in source-controlled infections and if confirmed susceptible by microbiology testing, which is now available.

## Ceftriaxone and Piperacillin-Tazobactam (pip-tazo) can be used for low-risk AmpC-producing organisms

Historically, it was taught that infections caused by ampC-producing organisms. (e.g. “SPICE” organisms) should not be treated with 3<sup>rd</sup> generation cephalosporins or pip-tazo due to selection of AmpC resistance<sup>1</sup>.

In 2024, the Infectious Diseases Society of America (IDSA) published new guidance dividing these organisms into two risk categories for inducible resistance<sup>2</sup>.

- moderate-risk: *Enterobacter* spp., *Klebsiella aerogenes*, *Citrobacter freundii*.
- low-risk: *Serratia marcescens*, *Providencia* spp., and *Morganella morganii*.

### What are AmpC $\beta$ -lactamases?

AmpC resistance affects 3<sup>rd</sup> generation cephalosporin and penicillin antibiotics.

These  $\beta$ -lactamases can be active (always on) or inducible (sometimes on).

Induction occurs *after* exposure to certain  $\beta$ -lactam antibiotics.

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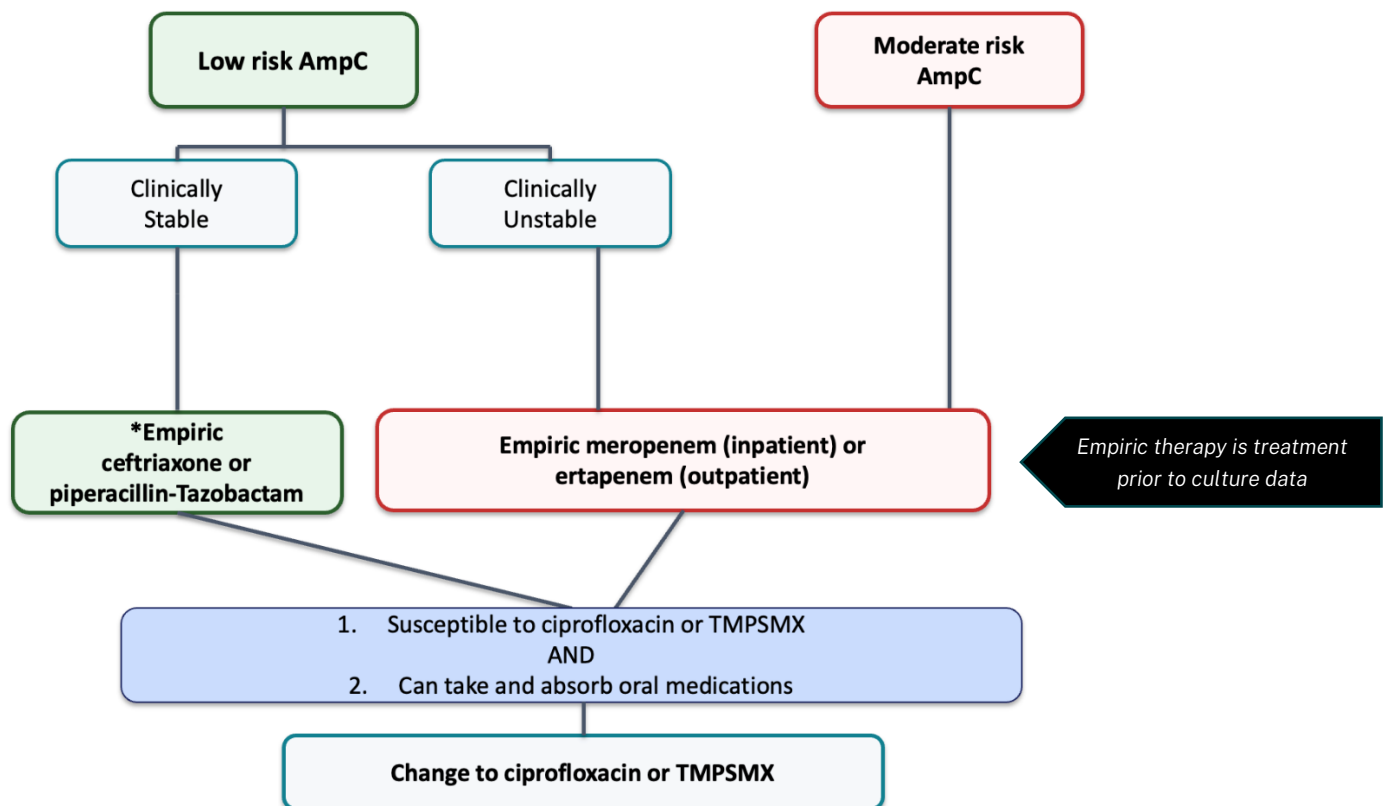
## What is new for the low-risk AmpC-producing organisms?

- <5% chance to select for resistance and therefore, in source-controlled infections, treatment with ceftriaxone or pip-tazo is acceptable.
- Susceptibility results for ceftriaxone and/or pip-tazo will now be released by Alberta Precision Laboratories (APL), thereby facilitating de-escalation from, or avoidance of, carbapenem therapy in most cases.

## What about moderate-risk AmpC-producing organisms?

- There is no change for moderate-risk AmpC-producing organisms.
- Advise continued avoidance of 3<sup>rd</sup> generation cephalosporins and pip-tazo in favor of alternative agents.

## An approach to treating AmpC-producing organisms

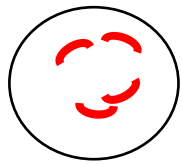


^Examples of infections not requiring source control: uncomplicated urinary tract infection, superficial skin and soft tissue infection, uncomplicated pneumonia.

\*Examples of uncontrolled sources of infection: undrained abscess, endocarditis, retained infected hardware.



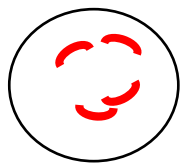
## Example scenarios demonstrating the forthcoming changes



Blood culture with *Providencia stuartii* from pyelonephritis

Antibiotic	Old Paradigm	New Paradigm
Ampicillin	R	R
Cefazolin	R	R
Ceftriaxone	(S) Hidden	<b>S</b>
Pip-tazo	(S) Hidden	<b>S</b>
Ciprofloxacin	S	S
TMP/SMX	S	S

As a low-risk organism that has tested susceptible, treatment with **ceftriaxone** or **pip-tazo** is acceptable.



Blood culture with *Serratia marcescens* from pyelonephritis

Antibiotic	Old Paradigm	New Paradigm
Ampicillin	R	R
Cefazolin	R	R
Ceftriaxone	<b>R</b>	<b>R</b>
Pip-tazo	*	*
Ciprofloxacin	S	S
TMP/SMX	S	S

This low-risk organism has de-repressed or constitutively active AmpC production as shown by susceptibility results. Therefore, **avoid ceftriaxone**.

\*Pip-tazo susceptibility available on request.

## What antimicrobials will be reported per organism?

### *Morganella morganii*

- Pip-tazo
- Ceftriaxone (on request only)

### *Serratia marcescens*

- Ceftriaxone
- Pip-tazo (on request only)

### *Providencia spp.*

- Pip-tazo
- Ceftriaxone



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# References

1. Tamma, P. D., Heil, E. L., Justo, J. A., Mathers, A. J., Satlin, M. J., & Bonomo, R. A. (2024). Infectious diseases Society of America 2024 guidance on the treatment of antimicrobial-resistant gram-negative infections. *Clinical infectious diseases*, ciae403.
2. Tamma, P. D., Doi, Y., Bonomo, R. A., Johnson, J. K., Simner, P. J., & Antibacterial Resistance Leadership Group Tamma PD Doi Y Bonomo RA. (2019). A primer on AmpC  $\beta$ -lactamases: necessary knowledge for an increasingly multidrug-resistant world. *Clinical infectious diseases*, 69(8), 1446-1455.

