Reducing Ceftriaxone Use in Community-Acquired Pneumonia on Inpatient Medicine Wards: An Antimicrobial Stewardship Effort

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BACKGROUND

- Antibiotic stewardship is essential to slowing bacterial resistance, protecting the effectiveness of existing antibiotics, improving patient safety, and safeguarding public health.
- Ceftriaxone was being used frequently for CAP within internal medicine teams at UAMS when narrow spectrum antibiotics were appropriate.
- Ceftriaxone exposure contributes to ESBL-production increasing risk of severe infections and puts patients at risk of C. diff infections.
- This QI project aims to shift treatment for CAP away from ceftriaxone to ampicillin/sulbactam on the inpatient medicine wards.
- Specific Goal: reduce ceftriaxone use by 5% over a 3-month period. Herein, we report preliminary data after one month of intervention.

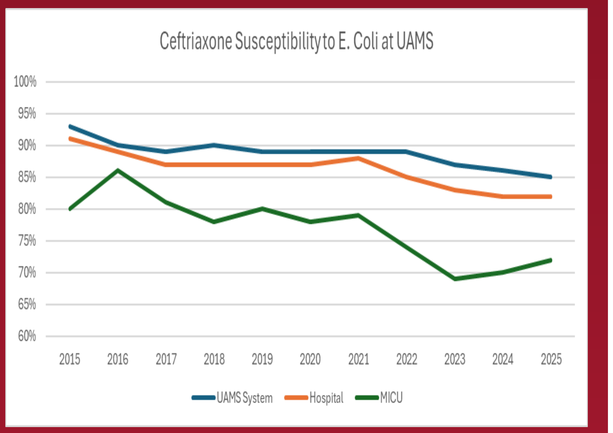

Figure 1: E. Coli susceptibility (%) to ceftriaxone within UAMS system, hospital, and medical intensive care unit from 2015 – 2025.

METHODS

- Study location: 559 bed academic tertiary-care hospital (University of Arkansas for Medical Sciences)

Education of IM residents/hospitalists (via live didactic sessions and electronic communication) on ceftriaxone risks and evidence-based practice CAP treatment

Provided all IM residents/hospitalists with weekly department ceftriaxone utilization rates compared to baseline and weeks prior

Ongoing targeted audit/feedback through best antimicrobial stewardship practice

- Ceftriaxone use was measured in days of therapy (DOT) per 1,000 patient days and was compared to a 12-week pre-intervention baseline period (11/01/2025-01/19/2026).
- Intra-intervention period was from 01/20/2026-02/21/2026
- Alternative antimicrobial treatments were also tracked during intervention to assess for balloon effect.

Narrow spectrum abx: amoxicillin, amoxicillin/clavulanate, ampicillin, ampicillin/sulbactam, and cefazolin

Broad spectrum abx: cefepime, piperacillin/tazobactam, meropenem

RESULTS

- Ceftriaxone use decreased from 109.4 to 80.0 DOT/1K patient days (-29.4; 37% relative decrease) in the pre- and intra-intervention periods, respectively (see Figure 2).

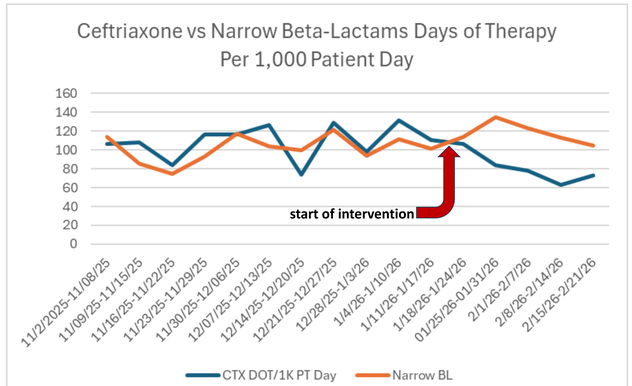

Figure 2: Ceftriaxone versus narrow beta-lactams (DOT/1K patient days) pre- and post-intervention

- During the intervention period, there was no significant increase in escalation to broader-spectrum agents, and in fact a decrease (Pre-142.1 vs Intra-129.5 DOT/1K patient days).
- There was significant increase in narrow spectrum agent use (Pre-101.3 vs Intra-120.7 DOT/1K patient days) (see Figure 3).

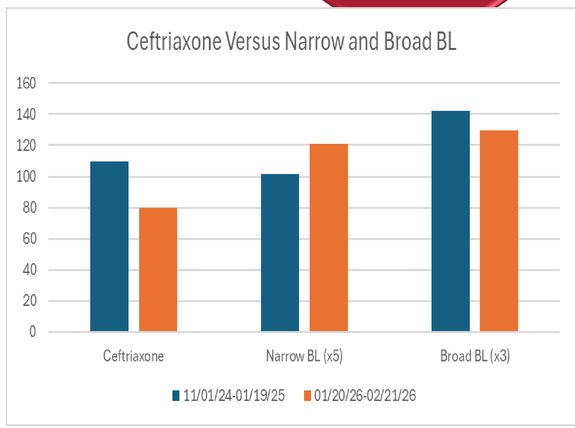

Figure 3: Ceftriaxone use compared to narrow and broad-spectrum beta-lactam use (DOT/1K patient days) during pre- and post-intervention.

CONCLUSIONS

This preliminary analysis shows that a structured stewardship intervention significantly reduced inpatient ceftriaxone use. Combining targeted didactic education, scheduled sharing of department level ceftriaxone utilization data, and focused ceftriaxone audit and feedback practice, we experienced effective change in prescribing behavior. Post intervention monitoring will determine if this is a sustainable approach. If so, this approach can be replicated in similar inpatient settings to optimize antimicrobial use and curb resistance.

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