

# Impact of pharmacist initiated electronic antimicrobial stewardship note on the appropriateness of antimicrobial therapy at renewal time

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## Background

- Inappropriate antibiotic use increases the risk of antimicrobial resistance and serious adverse events<sup>1-3</sup>
- Our institution adopts all elements recommended by the CDC to improve antimicrobial stewardship (AMS)<sup>4</sup>
- The purpose of this study is to engage prescribers to critically evaluate and improve antibiotic utilization through a AMS note and renewal communication in the electronic medical record (EMR)

## Methods

### Study design

- Pre- and post-intervention single center study

### Time-line

- Historical period: July 1st, 2019-September 30th, 2019
- Intervention period: October 1st, 2019-February 1st, 2020

### Targeted antibiotics

- Piperacillin/tazobactam (TAZ), cefepime (CEF), meropenem (MPN) and vancomycin (VAN)

### Study population

- Include: adults on targeted antibiotics for > 24-hours
- Exclude: patient on dialysis

### Primary outcome

- Median days of therapy (DOT)

### Secondary outcomes

- Median DOT per antibiotic
- Percentage of patients with ID consults
- Percentage of therapy optimization\*

\*continuation, escalation, de-escalation or discontinuation of antibiotic in line with the predefined criteria.

## Intervention

Identify patients

AMS note initiated by the pharmacist on EMR

Prescribers are required to respond to AMS note

Meet criteria: Document plan and extend duration

Do not meet criteria: De-escalate/discontinue or consult IDS

**Table 1:** Patients baseline characteristics

Demographics	Historical (n=72)	Intervention (n=81)	p-value
Females, n (%)	23 (31.9)	33 (40.7)	0.26
Age, μ	68	67	0.15
BMI, μ	27.5	28	0.72

### Indication, n (%)

Bacteremia	5 (6.8)	4 (4.9)	0.59
Cardiovascular	0 (0)	2 (2.5)	0.06
Bone & joint	6 (8.3)	10 (12.3)	0.41
Pneumonia	25 (34.7)	20 (24.6)	0.17
UTI	17 (23.6)	14 (17.3)	0.33
IAI	7 (9.7)	13 (16)	0.25
SSTI	2 (2.8)	10 (12.3)	<b>0.03</b>
Other	10 (13.9)	8 (9.9)	0.44

### Microbiology, n (%)

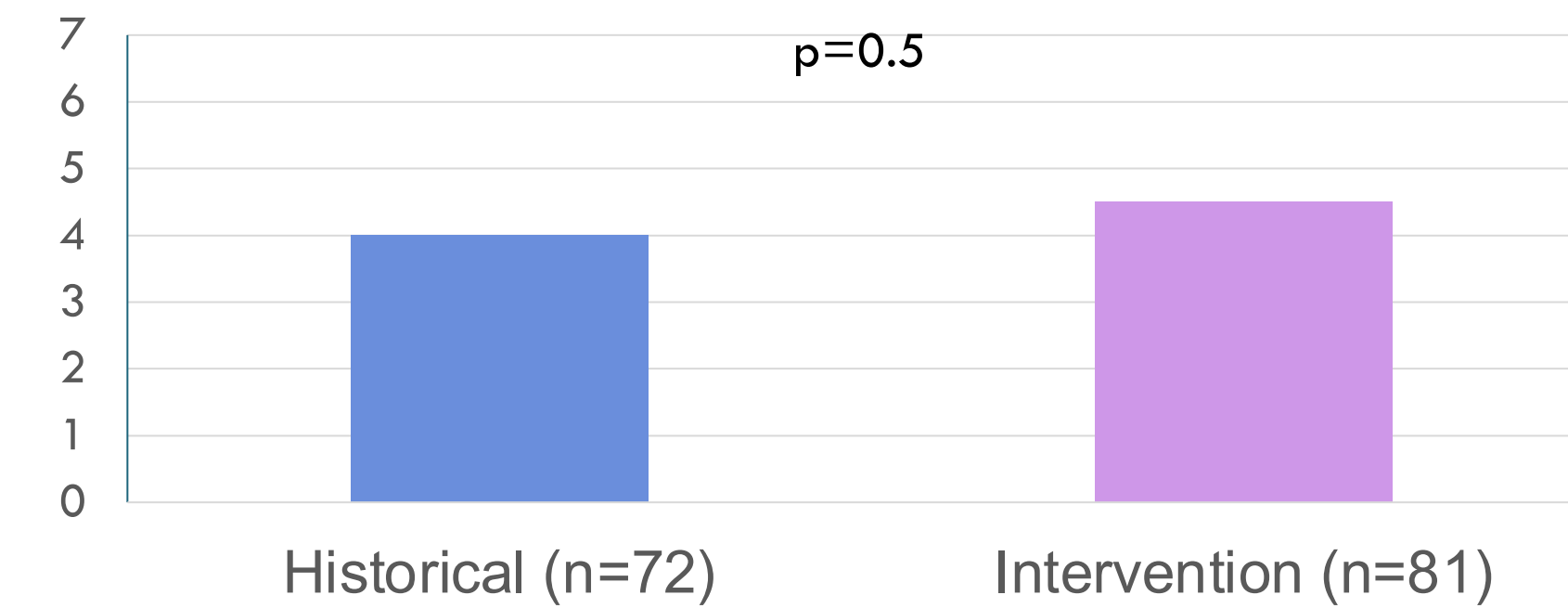
Pseudomonas aeruginosa	4 (5)	11 (13.6)	0.09
Extended-spectrum beta-lactamases (ESBL)	5 (7)	5 (6.1)	0.85
AmpC producing bacteria	13 (18.1)	17 (20.7)	0.75
Methicillin-resistant staph. aureus (MRSA)	2 (2.8)	3 (3.7)	0.65

### Antibiotic, n (%)

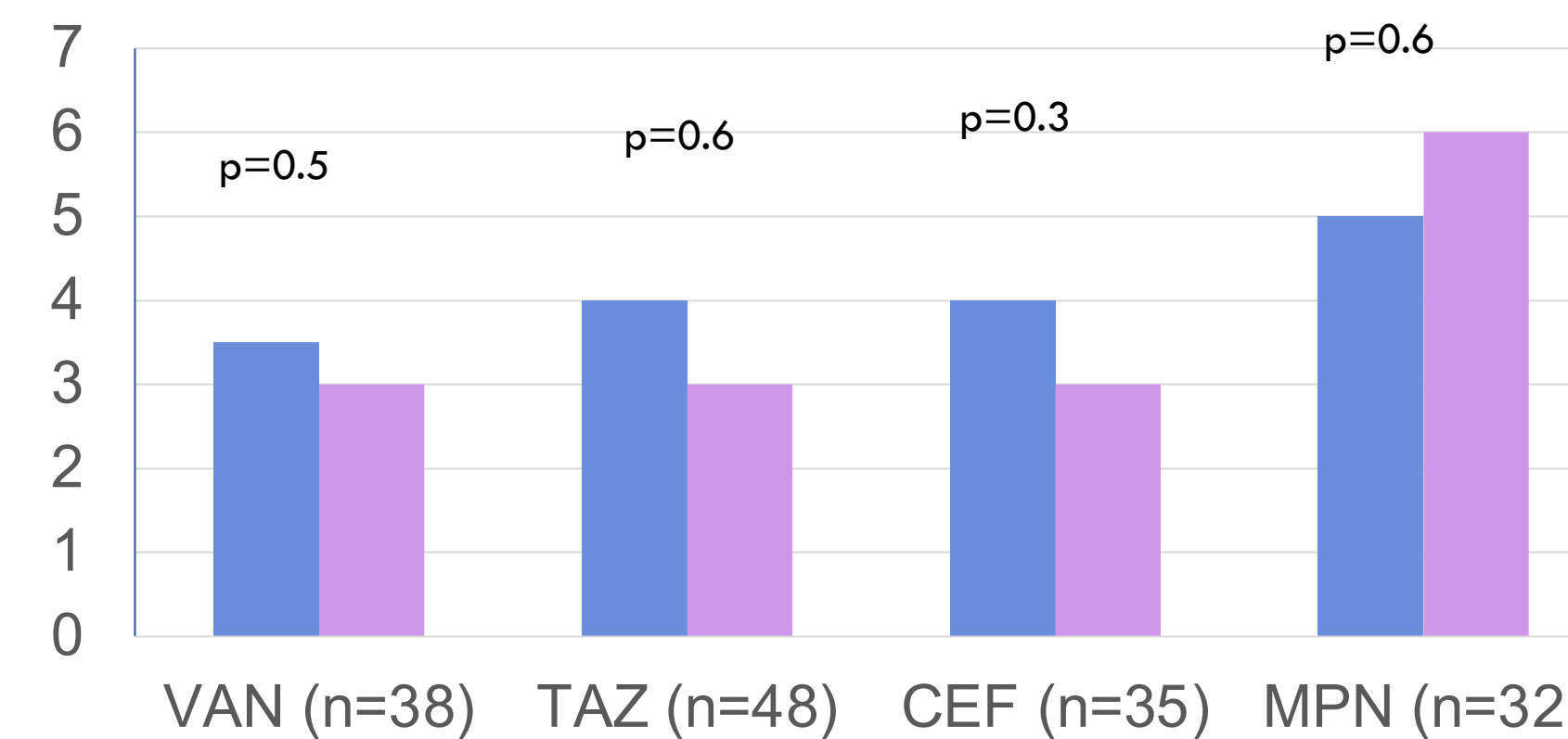
Vancomycin (VAN)	17 (26.6)	21 (25.9)	0.74
Piperacillin/Tazobactam (TAZ)	28 (38.9)	20 (24.7)	0.06
Cefepime (CEF)	12 (16.7)	23 (28.4)	0.09
Meropenem (MPN)	15 (20.8)	17 (20.1)	0.98

## Results

**Figure 1:** Primary outcome: Median Days of Therapy



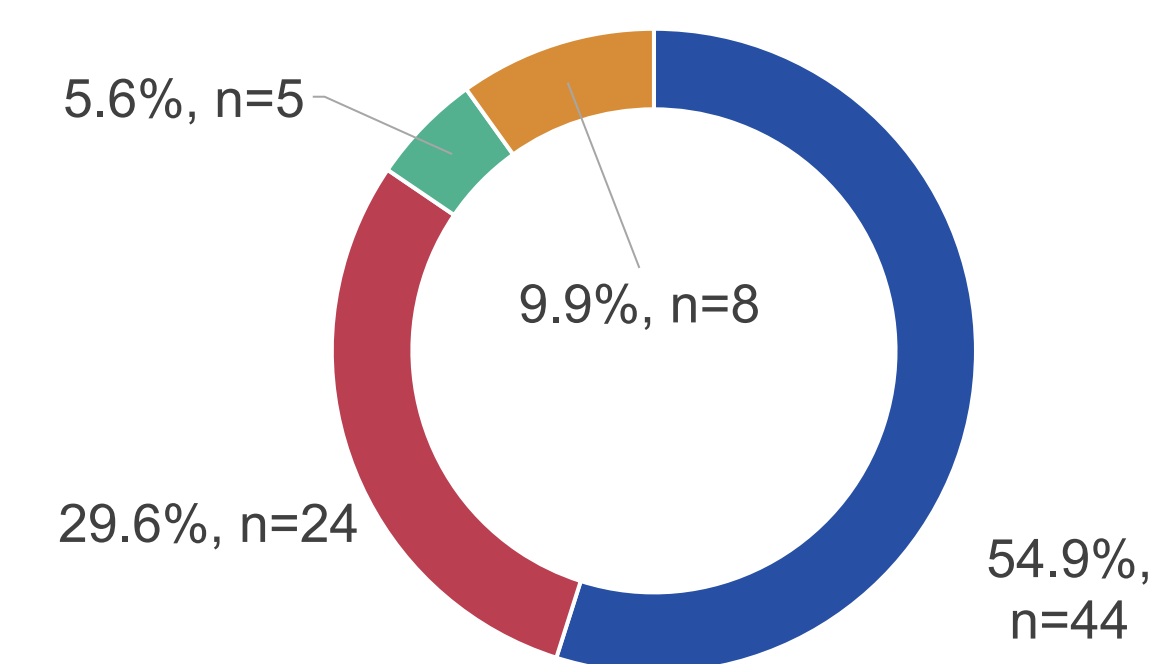
**Figure 2:** Secondary outcomes: Median DOT per antibiotic



**Table 2:** Secondary outcomes

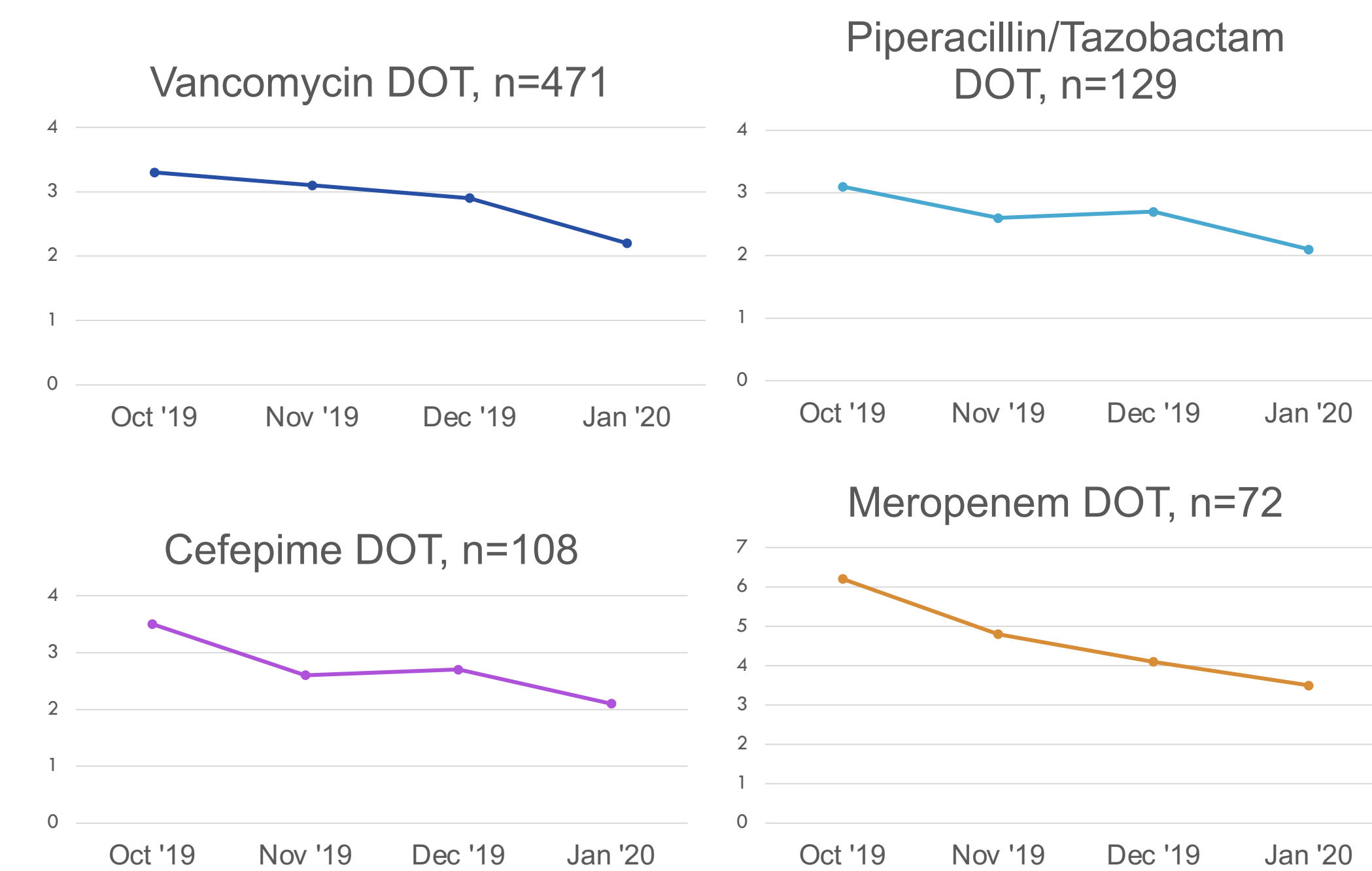
	Historical (n=72)	Intervention (n=81)	p-value
Infectious Disease Consults, n (%)	30 (41.7)	48 (59.3)	<b>0.03</b>
Appropriate therapy optimization, n (%)	--	71 (87.7)	--

**Figure 3:** Therapy optimization



Continuation De-escalation  
Escalation Discontinuation

**Figure 4:** Hospital overall DOT during intervention period



## Limitations

- Single center
- Small sample size
- Electronic medical record data entry and collection

## Summary

- Our intervention showed a numerical reduction in DOT for vancomycin, cefepime and piperacillin/tazobactam, but not for meropenem.
- The pharmacist intervention demonstrated high percentage (87.7%) of treatment optimization with 39.6% de-escalation/discontinuation of restricted antimicrobials.
- A decline in DOT was observed during the study, suggesting potential change in antimicrobials prescribing culture during the intervention period.

## Conclusion

Pharmacist clinical guidance through an electronic note in the medical record can provide a powerful educational tool to promote adherence to antimicrobials best practice

## References

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## Disclosure

The Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities.