

Optimizing antimicrobials use in hemodialysis patients: the role of clinical pharmacist, a retrospective study

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Introduction

Serious infection is one of the leading causes of death among hemodialysis patients (HD). Compared to the general population, there is a higher rate of systemic infection in HD patients due to central venous catheter insertion and a compromised immune system. Besides, Inappropriate use of antimicrobials is a major contributing factor to bacterial resistance. While antimicrobial stewardship programs lead to improved clinical outcomes, reduced microbial resistance, and infection-related costs, few reports described such programs in HD patients. Thus, this study aims to describe antimicrobial prescribing patterns in HD patients and evaluate the role of clinical pharmacists in an antimicrobial stewardship program in such patients

Objectives

Our study was to evaluate and illustrate antibiotics use among hemodialysis patient and related pharmacist interventions.

Endpoints

- Primary outcome was to describe the antibiotics prescription among hemodialysis.
- Secondary outcome were describing antimicrobials-related pharmacist interventions and their economic impact.

Methods

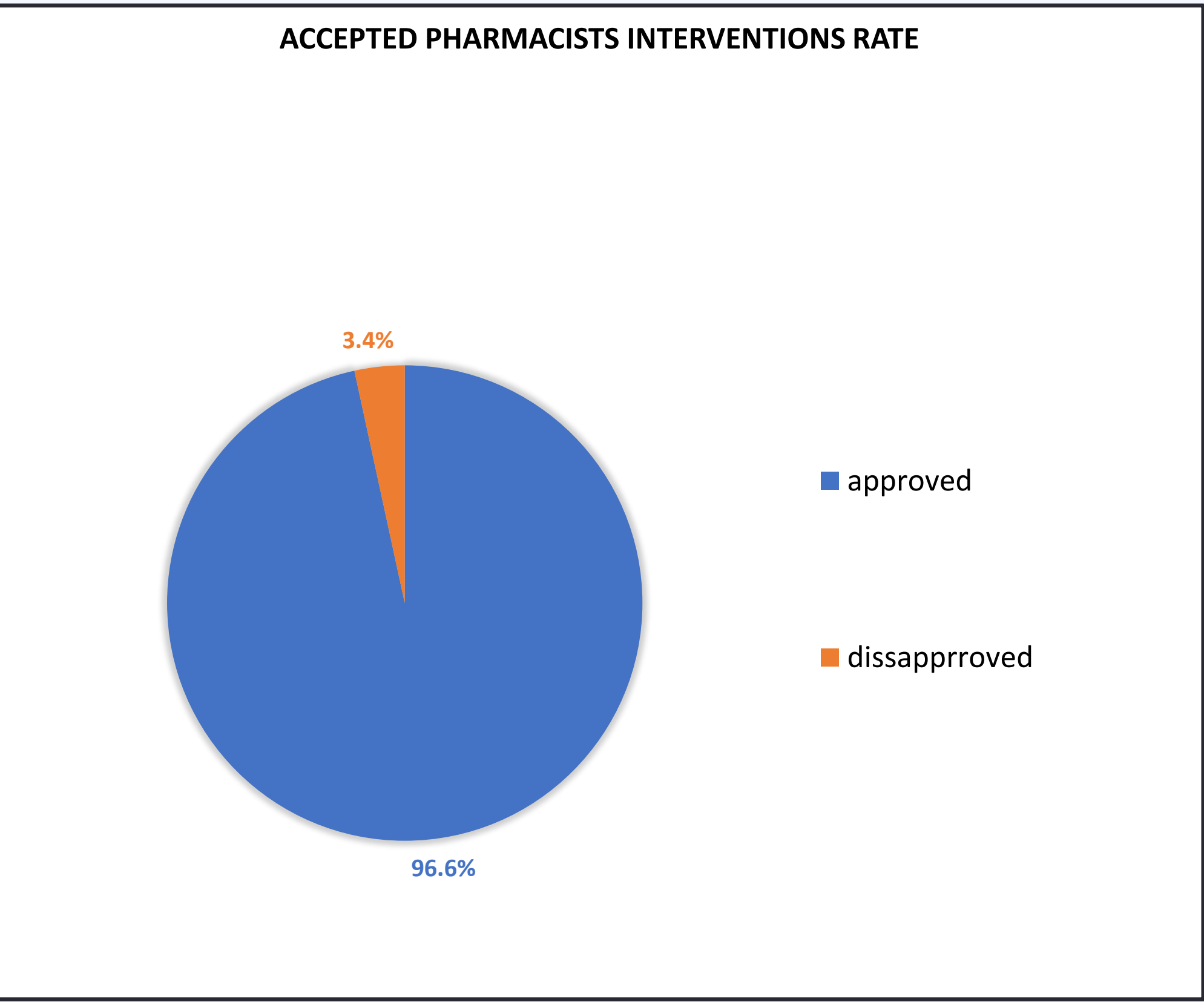
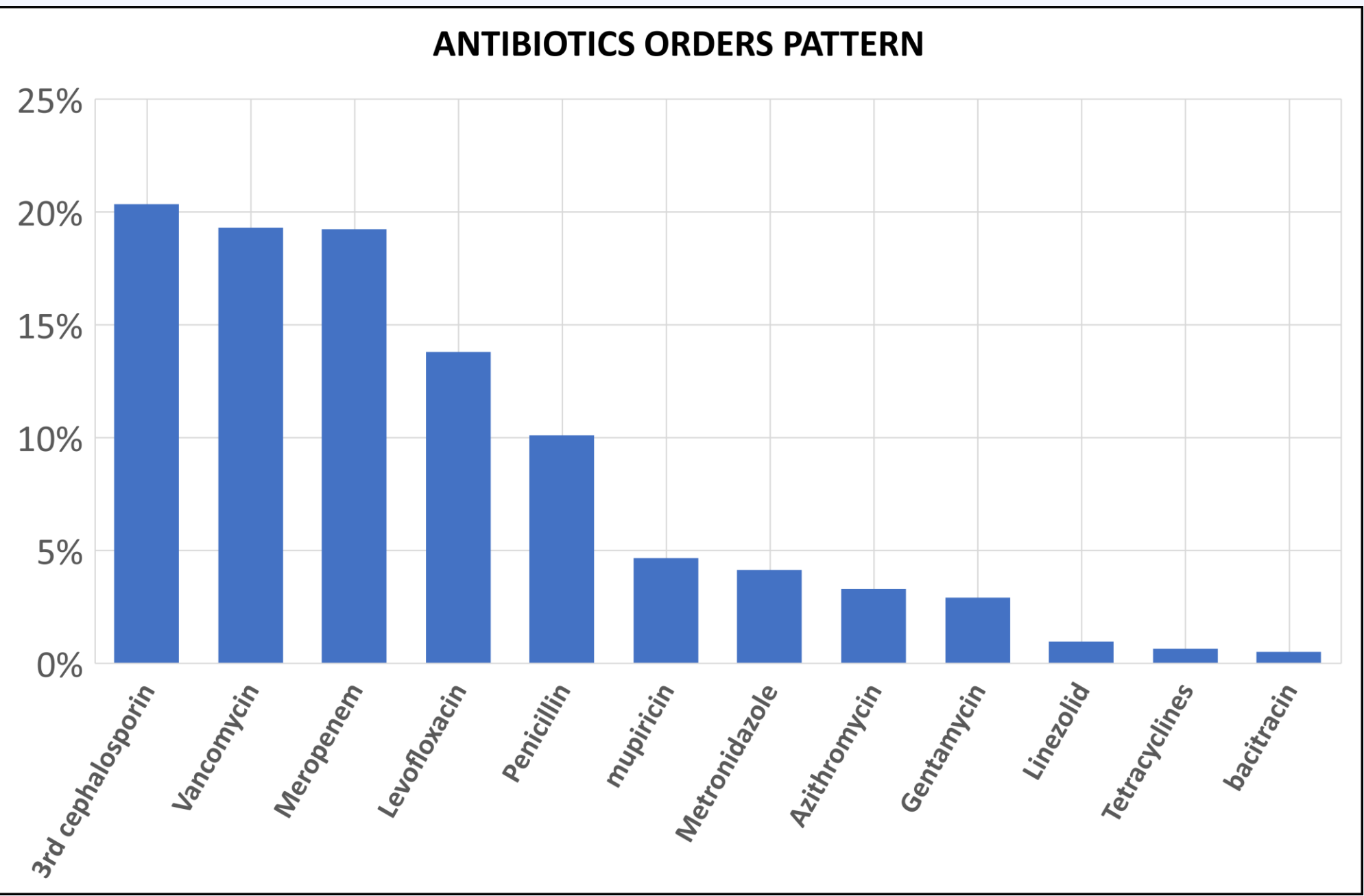
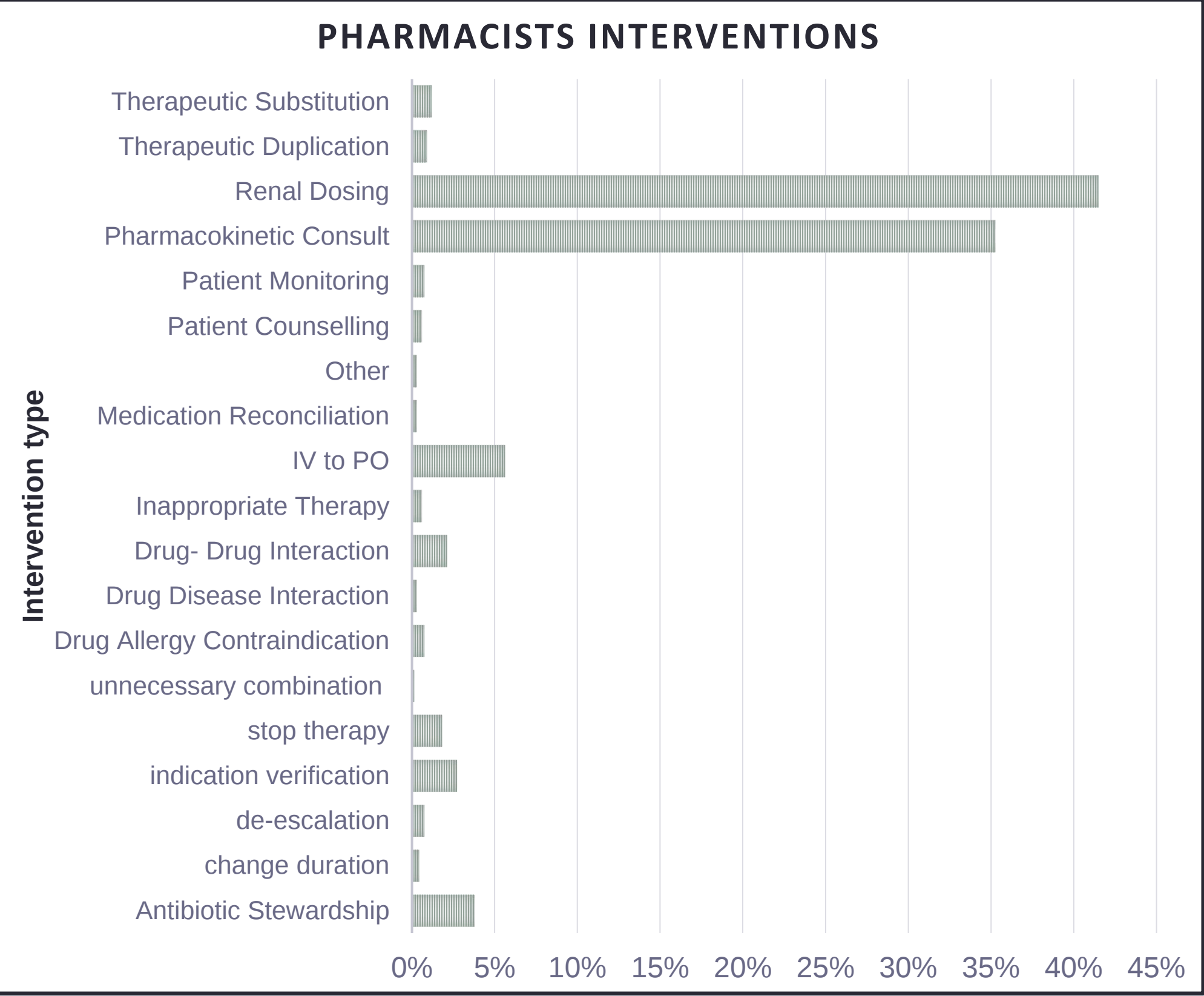
This was a retrospective chart review study in a tertiary care hospital between April 2018 and April 2020. All adult hemodialysis patients who received antimicrobials either in the inpatient setting or as outpatients were included in the study. Pharmacy Interventions were retrieved from the electronic health record (EHR). Data were analyzed using SPSS software version 22. P-value <0.05 was considered significant.

PARTICIPANTS CHART

Included participants	239	
Male	124	(52%)
Female	115	(48%)
Age	18-96 years	Mean (63.5)
Weight	34-180 kg	Mean (74.4)
WBCs	(3-56) K	Mean (10)K

Results

- A total of 1545 antibiotics (Abx) orders were retrieved. Most prescribed antibiotics were third-generation cephalosporin, vancomycin, and meropenem (20.3%, 19.3%, and 19.2%, respectively).
- A total of 655 (one pharmacist intervention per 2.46 orders) were identified during the study period with a 96.6% physicians' acceptance rate. Unaccepted interventions were mainly in gram-negative cultures and staphylococcus aureus.
- The medication with the highest acceptance rate was vancomycin, while the highest unacceptance rate was for meropenem ($p=0.0001$).
- The most common category of pharmacy interventions was renal dosing and pharmacokinetic consultations (41.6% and 35.4%, respectively).
- Renal dosing resulted in the highest cost reduction (85722 USD), followed by Pharmacokinetic consultations (72848 USD) and drug-allergy contraindications (23430 USD). Changing the route of administration led to a reduction of drug cost by (11618 USD).

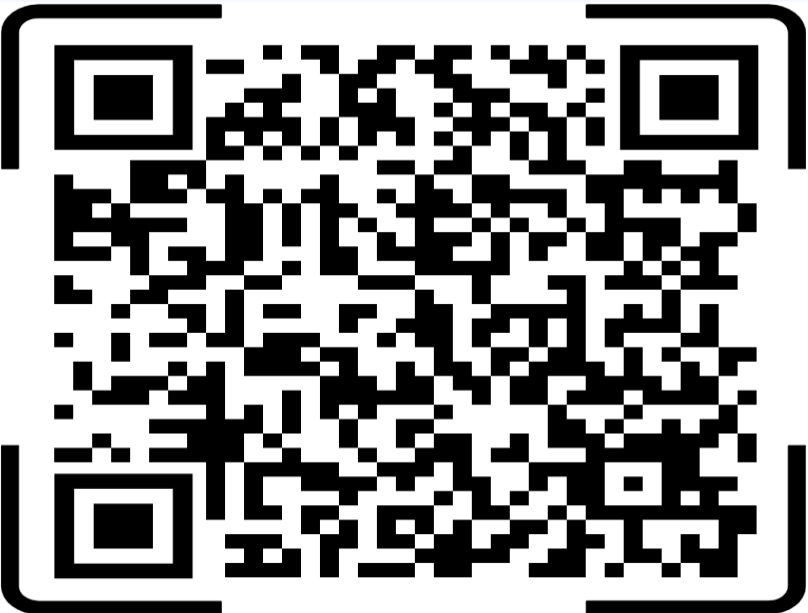


Conclusions

Clinical pharmacists can play a vital role in optimizing antimicrobial use among hemodialysis patients and reducing antimicrobial costs.

References

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