



MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

Epidemiology of Polymyxin B and Colistin Use in a Tertiary Care Setting within South India

Vidya Menon MD, FACP¹, Payal K. Patel MD, MPH^{2, 3}, Vrinda Nampoothiri PharmD¹ Anil Kumar MD¹, Zubair Mohamed MD, FFICM¹ Sangita Sudhir PharmD¹, Jason Pogue PharmD⁴, Sanjeev Singh MD, PhD¹, Keith Kaye MD, MPH²

¹Amrita Institute of Medical Sciences and Research Center, Kochi, India, ²University of Michigan Medical School, Ann Arbor, MI ³VA Ann Arbor Healthcare System, Ann Arbor, MI, ⁴Wayne State University, Detroit, MI



AMRITA
VISHWA VIDYAPEETHAM
UNIVERSITY

INTRODUCTION

- Polymyxins are increasingly used in multidrug-resistant infections
- Along with carbapenems, there has been a focus on reduction of polymyxin use in Indian hospitals due to emerging resistance
- There is little information describing how polymyxins are used in regions with high gram negative resistance, like India

OBJECTIVE

- Describe, track and record appropriateness of polymyxin use after setting institutional guidelines for polymyxin use
- Delineate how stewardship can improve use of polymyxins

METHODS

Study population: All inpatient admissions at Amrita Institute of Medical Sciences, a 1300 bed hospital in Kochi, India between 2/15/2016-2/15/2017

Data Collected:

- All patients receiving polymyxin B and colistin (PB, Col) were reviewed
- A detailed data collection of the study population included demographics, department, diagnosis, labs, microbiology data, if culture was sent prior to polymyxin use and focus of infection, and antibiotic prescribed, dosing, route and frequency

Primary Endpoint:

- Definition of Appropriate use of Polymyxins: Right drug given for right indication at the right dose, frequency, and duration
- All five needed to be met for appropriateness

Statistical Approach:

- Descriptive statistical analysis was used with Chi square test for categorical variables; Student T test for continuous variables

RESULTS

- During the 12-month study period, 348 patients received 295 colistin and 94 PB courses
- Mean age was 50 ± 22.3 yrs old
- 73% of patients were male
- Patients on Medicine and Hematology/Oncology teams accounted for 26% and 16% of all prescriptions
- The most common infections were bacteremia (34%), pneumonia (29%) and UTI (23%)
- Pathogens were recovered in 69% (269/389) of cases
- Klebsiella pneumoniae* 34% (90/269) and *Acinetobacter baumannii* 17% (45/269) were most common causes of infection
- Baseline defined daily dose of colistin was 20.4 million units
- Baseline defined daily dose of polymyxin B was 0.5 million units
- 25% (99) of polymyxin courses were judged to be appropriate
- The most common reason for inappropriateness was incorrect frequency of administration 70% (230).
- 95% of incorrect maintenance dosing for both polymyxin B and colistin were too low
- Reasons for inappropriateness were similar for both polymyxins

Figure 1: Description of Polymyxin Use

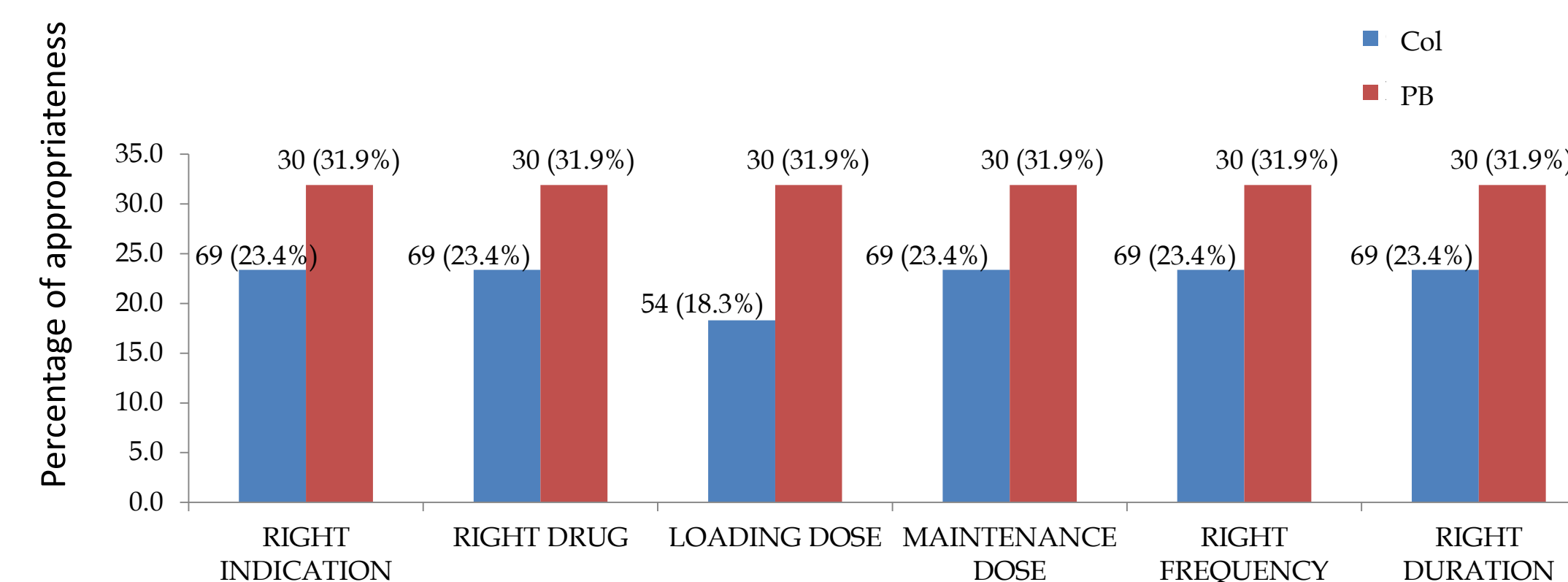
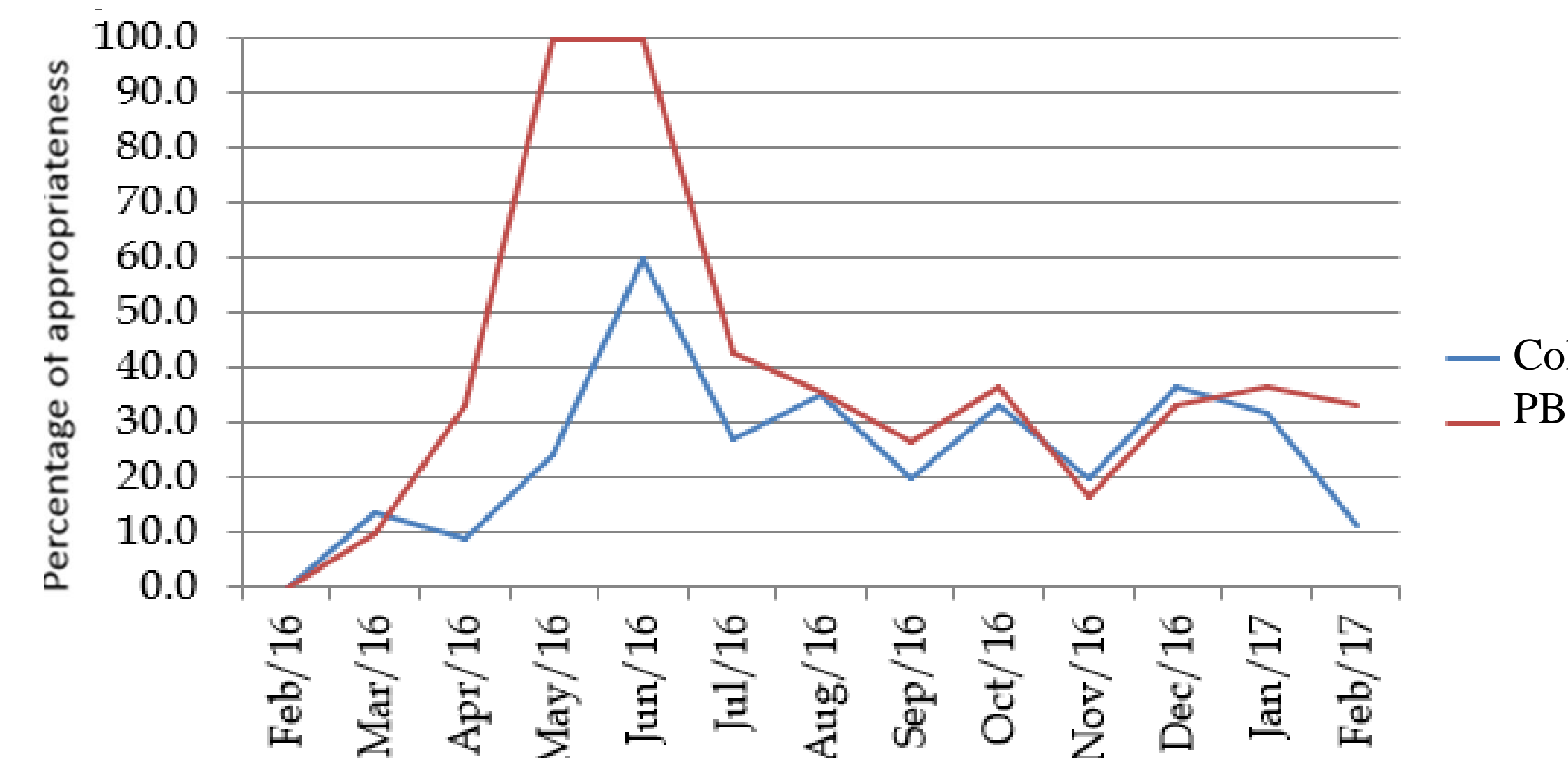


Figure 2: Percentage Appropriateness of Polymyxin



CONCLUSIONS

- Review of polymyxin use in this hospital indicates that there is a significant amount of inappropriate use of these antimicrobials
- Dosing and duration of polymyxins should be targeted for stewardship interventions in this center
- More studies are needed to understand polymyxin use in hospitals with resistant gram negative bacteria as part of the hospital flora