

Profile of Antibiotic Use in Acute Respiratory Tract Infection Patients at Pratama Soedirman Clinic in 2024

Afrizal Noor Hanifan^{1*}, Indah Rahmawati¹, Octavia Permata Sari¹

¹Faculty of Medicine of Jenderal Soedirman University, Purwokerto, Indonesia

*Corresponding author. E-mail: afrizal.hanifan@mhs.unsoed.ac.id

Abstract

Background: Acute Respiratory Tract Infection (ARTI) is one of the diseases with the highest prevalence in Indonesia, frequently leading to widespread antibiotic use. Irrational antibiotic prescribing for ARTI, which is predominantly caused by viruses, can increase the risk of antimicrobial resistance. As a primary healthcare provider, Soedirman Pratama Clinic needs to monitor antibiotic prescribing patterns to ensure the quality of pharmaceutical care. **Objectives:** This study aims to determine the profile of antibiotic use in ARTI patients at Soedirman Pratama Clinic during the 2024 period, including patient characteristics as well as the types, classes and appropriateness of antibiotic selection. **Methods:** This study is a descriptive study with retrospective data collection through the medical records of ARTI patients at Soedirman Pratama Clinic from January to December 2024. The sampling technique used was total sampling meeting the inclusion criteria. **Key Findings:** The result showed that out of a total of 2,546 samples, ARTI patients were dominated by the 12-25 age group (72%) and female gender (66.7%). The most frequently diagnosed type of ARTI was Acute Upper Respiratory Infections of Multiple and Unspecified Sites. The most commonly prescribed antibiotic class was fluoroquinolone with ciprofloxacin being the most used antibiotic at (36.4%). **Conclusions:** Antibiotic use in ARTI patients at Soedirman Pratama Clinic in 2024 was dominated by fluoroquinolone.

Keywords: Antibiotic, ARTI, Primary Clinic, Drug Utilization Profile

Introduction

Acute Respiratory Tract Infection (ARI) is a disease that affects the upper and lower respiratory tract with a mild to severe clinical spectrum. This disease has a high prevalence globally and nationally and is the main cause of visits to primary health services. In Indonesia, ISPA is still a public health problem with high prevalence rates in various provinces, including Central Java. [1,2]

Most cases of ISPA (80–90%) are caused by viral infections, while the rest are caused by bacteria or fungi. However, the use of antibiotics is still often carried out in ISPA patients. Irrational use of antibiotics can increase the risk of antimicrobial resistance, which has an impact on increased morbidity, mortality, and health costs. [3,4]

Pratama Soedirman Clinic is a first-level health facility that serves the academic community and the general public in Purwokerto. Until now, there has been no study that specifically evaluates the pattern of antibiotic use in ISPA patients at the clinic. Therefore, this study aims to determine the profile of antibiotic use in ISPA patients at the Pratama Soedirman Clinic in 2024. [5]

Methods

This study is a descriptive research with a retrospective approach using medical record data of ISPA patients at the Pratama Soedirman Clinic for the period January-December 2024.

Population and Sample

The study population was the entire patient diagnosed

with ISPA during the study period. The sampling technique used total sampling with inclusion criteria in the form of complete medical records and ISPA diagnosis based on ICD-10. The variables analyzed include:

1. Characteristics of the patient (age and gender)
2. Diagnosis of ISPA based on ICD-10
3. Types and classes of antibiotics used

Data Analysis

Data were analyzed descriptively using frequency and percentage distributions to describe patterns of antibiotic use.

Results and Discussion

The total number of samples that met the study criteria was 2,546 patients. Most patients were in the age group of 12–25 years (72%). Based on gender, female patients are more dominant than men (66.7%). The most common diagnosis of ISPA is Acute Upper Respiratory Infections of Multiple and Unspecified Sites, showing a predominance of non-specific upper respiratory tract infections. The most widely prescribed class of antibiotics is fluoroquinolones. Ciprofloxacin is the most commonly used antibiotic with a percentage of 36.4%. Antibiotic use was also found in various age groups and diagnoses of ARI. [6,7]

The results showed the dominance of the adolescent to young adult age group, which is in line with high mobility and environmental exposure. The dominance of female patients can be influenced by higher behavioral factors in

seeking health services than men. The diagnosis of non-specific ISPA was the main finding, in accordance with the pattern of disease in primary services. However, the high use of antibiotics in conditions that are likely to be viral indicates the potential for irrational antibiotic use. [8,9]

Fluoroquinolones, specifically ciprofloxacin, are the most widely used antibiotics. The use of fluoroquinolones in primary care needs to be evaluated as they include broad-spectrum antibiotics with a high risk of resistance. Therapeutic guidelines generally recommend narrower first-line antibiotics if necessary. These findings demonstrate the need for antimicrobial stewardship programs in primary health facilities, including medical personnel education, antibiotic prescription audits, and the development of evidence-based therapeutic guidelines. [10,11]

Conclusion

The use of antibiotics in ISPA patients at the Pratama Soedirman Clinic in 2024 is dominated by the fluoroquinolone group with ciprofloxacin as the most antibiotics. These findings suggest the need for evaluation of antibiotic use to improve therapeutic rationality and prevent antimicrobial resistance.

Supplementary Material

None

Author Contributions

ANH : Conceptualization, Methodology, Writing-Original Draft. **IR** : Data Curation, Formal Analysis, Visualization. **OPS** : Supervision, Funding Acquisition, Writing- Review & Editing.

Conflict of Interest

The authors have no financial conflicts of interest to declare.

Acknowledgement

The author would like to thank the Soedirman Pratama Clinic Purwokerto for the permits and facilities provided so that this research can be carried out. Thank you are also expressed to all parties who have assisted in the process of collecting data and preparing this research.

References

- [1] Banyumas D. Health Profile of Banyumas Regency 2024. *Journal of Chemical Information and Modeling*. 2024;53(9):1689–99.
- [2] BPS. Kediri City in Numbers. 2024. p. 1–68.
- [3] Amarullah A, Adzani F, et al. Antibiotic resistance education to the community in Senganmijen Village, Krian Sidoarjo. *Journal of Community Service*. 2022;1(2):7–9.
- [4] Arrang ST, Cokro F, Sianipar EA. Rational antibiotic use by ordinary people in Jakarta. *PARTNERS: Journal of Community Empowerment*. 2019;3(1):73–82. doi:10.25170/mitra.v3i1.502.
- [5] Effendi F, Evelin A. Evaluation of the use of antibiotics in patients with acute respiratory infection (ISPA) using the ATC/DDD method at the Beji Depok Health Center for the January–June 2019 period. *Journal of Pharmacy*. 2020;5(1):8–13.
- [6] Gunawan E, Rusnaeni R, Febrianty SD. Profile of antibiotic use in toddlers with ISPA at the West Koya Health Center for the January–December 2020 period. *JFIONline*. 2023;15(1):86–93. doi:10.35617/jfionline.v15i1.98.
- [7] Dirga D, et al. Evaluation of the use of antibiotics in inpatients in the internal medicine ward of Dr. H. Abdul Moeloek Hospital, Lampung Province. *Indonesian Pharmaceutical Journal*. 2021;11(1):65–75. doi:10.22435/jki.v11i1.3570.
- [8] Fadila FN, Siyam N. Risk factors for acute respiratory tract infections (ARI) in children under five. *HIGEIA Journal of Public Health Research and Development*. 2022;6(4):320–31. doi:10.15294/higeia.v6i4.56803.
- [9] Ernawati E, Dwimawati E, Parinduri SK. Factors related to the incidence of ISPA in children under five years old at the Lebakwangi Health Center, Cigudeg District, Bogor Regency. *Promoter*. 2022;5(5):385–88. doi:10.32832/pro.v5i5.8484.
- [10] Brunton L, Hilal-Dandan R, Knollmann B. Goodman & Gilman's the pharmacological basis of therapeutics. 14th ed. New York: McGraw-Hill Education; 2023.
- [11] Amarullah A, Anwari F, et al. Rationality of antibiotic use in public health centers. *Journal of Pharmaceutical Anwar Medika*. 2022;4(2):82–7.