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Evaluation of Antibiotic Prescribing in Acute Respiratory Infection (ARI) Patients at Puskesmas Paal V Kota Jambi During the 2024 Period

Agustina[1], Ega Setia Ningsih[2], Suci Putri Cahyani[3], Septa Pratama[4]

[1,2,3,4] Pharmacy Study Program, Universitas Adiwangsa Jambi

Corresponding Author: Agustina, e-mail: agustinatarmizii@gmail.com

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ABSTRACT

Acute Respiratory Infection (ARI) is a leading cause of morbidity and mortality from infectious diseases worldwide, primarily originating from lower respiratory tract infections. The study purpose was to evaluate the appropriateness of antibiotic prescribing in ARI patients at Puskesmas Paal V Kota Jambi during 2024 based on pharmaceutical care guidelines.

Materials and methods. This study used a descriptive quantitative design with a retrospective approach. Data were obtained from 930 medical records of ARI patients treated at the Paal V Public Health Center during 2024. The evaluation of antibiotic prescribing was conducted based on the rationality criteria, induding the accuracy of indication, drug selection, patient identity, dosage, and administration interval. Statistical analysis was performed using the Chi-Square test to determine the relationship between the type of ARI diagnosis and the type of antibiotic prescribed.

Results. The findings showed that Amoxicillin was the most frequently prescribed antibiotic (82.5%), followed by Ciprofloxacin (9.8%) and Cotrimoxazole (6.1%). The evaluation of rational antibiotic use demonstrated that the accuracy rates for indication, drug selection, patient identity, and administration interval each reached 94.19%, while dosage accuracy was 92.04%. Statistical analysis using the Chi-Square test indicated a significant relationship between the type of ARI diagnosis and the type of antibiotic prescribed ($p = 0.000$).

Conclusions. Antibiotic prescribing practices for ARI patients at the Paal V Public Health Center during 2024 were generally categorized as very good and consistent with therapeutic standards. However, continuous monitoring and evaluation of dosage appropriateness are still needed to optimize the effectiveness and safety of patient therapy.

Keywords: ARI, Antibiotic Prescribing, Public Health Center, Medical Records

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INTRODUCTION

Acute Respiratory Infection (ARI) remains one of the leading causes of morbidity and mortality due to infectious diseases worldwide. Each year, approximately 4 million people die from ARI, and nearly 98% of these deaths are caused by lower respiratory tract infections. The mortality rate is particularly high among infants, children, and the elderly, especially in low- and middle-income countries (World Health Organization, 2020). In Indonesia, data from the Basic Health Research (Riskesdas) 2018 showed that 35.8% of disease cases were caused by acute respiratory infections, indicating that ARI continues to be a major public health problem requiring serious attention, including in the aspect of rational antibiotic use.

The use of antibiotics in ARI cases must be carried out appropriately to prevent irrational prescribing practices that may lead to antibiotic resistance, increased treatment costs, and therapeutic failure. Rational antibiotic prescribing includes appropriate indication, drug selection, patient suitability, dosage, and administration interval according to pharmaceutical care guidelines. However, several previous studies in Jambi City demonstrated that antibiotic prescribing practices

for ARI patients have not been fully rational. A study conducted at Puskesmas Olak Kemang in 2018 found that only the accuracy of indication reached 100%, while the accuracy of patient suitability was 98.5%, drug selection 54.2%, and dosage accuracy 48.5%, indicating that most prescribing parameters had not yet met rational standards (Dewi et al., 2020). Another study at Puskesmas Koni in 2019 showed that the accuracy of patient suitability, indication, and dosage had reached 100%, but the duration of antibiotic administration remained inappropriate at 0%, suggesting inconsistency in the length of antibiotic therapy (Darmayanti et al., 2020).

Based on preliminary survey data from the Jambi City Health Office in 2024, Puskesmas Paal V Kota Jambi recorded the highest use of antibiotics for ARI cases among public health centers in Jambi City. This condition indicates the need for a more comprehensive evaluation of antibiotic prescribing practices to ensure the rational use of antibiotics and improve the quality of patient care.

This study aims to evaluate antibiotic prescribing practices among ARI patients at the Paal V Public Health Center in Jambi City during 2024 based on pharmaceutical care guidelines for respiratory tract infections. Specifically, this research seeks to identify the most frequently prescribed antibiotics and evaluate the appropriateness of indication, drug selection, patient suitability, dosage, and administration interval in ARI treatment.

The findings of this study are expected to provide valuable information for pharmacists and healthcare providers regarding the evaluation of antibiotic prescribing practices in public health centers. In addition, the results may contribute to improving the quality of antibiotic use, optimizing therapeutic outcomes, and minimizing the risk of antibiotic resistance among ARI patients.

METHOD

Research Design

This study used a quantitative descriptive approach with a retrospective non-experimental design. Quantitative research is a research method used to examine a particular population or sample by analyzing numerical data statistically (Sugiyono, 2018). The retrospective approach was carried out by reviewing past medical records of Acute Respiratory Infection (ARI) patients who received antibiotic therapy at Puskesmas Paal V Kota Jambi during the 2024 period.

This research aimed to evaluate the appropriateness of antibiotic prescribing practices in ARI patients based on pharmaceutical care guidelines for respiratory tract infections. The evaluation focused on the accuracy of indication, drug selection, patient suitability, dosage, and administration interval.

Place and Time of Research

The study was conducted at Puskesmas Paal V Kota Jambi located at Jl. Kol. M. Kukuh No. 66, Kota Baru District, Jambi City, Jambi Province. Data collection and analysis were carried out from October 2025 to November 2025 using medical records of ARI patients receiving antibiotics from January to December 2024.

Population and Sample

The population in this study consisted of all medical records of ARI patients receiving antibiotic therapy at the Paal V Public Health Center during 2024 based on the Pharmaceutical Care Guidelines for Respiratory Tract Infections issued by the Indonesian Ministry of Health (Departemen Kesehatan RI, 2005).

The sampling technique used in this study was total sampling, in which all medical records that met the inclusion criteria were used as research samples. The inclusion criteria included medical records of ARI patients containing antibiotic prescriptions and complete patient data. Medical records with incomplete information were excluded from the study.

Data Collection

Data collection was conducted through observation and documentation by reviewing medical records retrospectively without any intervention in the prescribing process. The collected data included patient characteristics, ARI diagnosis, type of antibiotic prescribed, and the appropriateness of antibiotic prescribing based on indication, drug selection, patient suitability,

dosage, and administration interval. Data collection was carried out using an observation sheet prepared according to pharmaceutical care standards for respiratory tract infections.

Data Analysis

The obtained data were analyzed using descriptive and inferential statistical methods. Descriptive analysis was performed to calculate the percentage distribution of antibiotic types and the appropriateness of antibiotic prescribing based on the criteria of indication, drug selection, patient suitability, dosage, and administration interval (Dewi et al., 2020). The results were presented in the form of tables and diagrams to facilitate interpretation.

The percentage of antibiotic prescribing accuracy was calculated using the following formula

$$\% = \frac{Number\ of\ Appropriate\ Prescriptions}{Total\ Prescriptions} \times 100\% \quad (1)$$

The percentage of antibiotic type distribution was calculated using the following formula:

$$\% = \frac{Number\ of\ Antibiotic\ Types}{Total\ Prescriptions} \times 100\% \quad (2)$$

Inferential statistical analysis was conducted using the Pearson Chi-Square test to determine the relationship between ARI diagnosis and the type of antibiotic prescribed. The hypothesis testing criteria were as follows:

a. If $p < 0.05$, H_0 was rejected and H_1 was accepted, indicating a significant relationship between variables.
b. If $p \geq 0.05$, H_0 failed to be rejected, indicating insufficient statistical evidence of a relationship between variables (McHugh, 2013).

Research Procedure

The research procedure consisted of several stages:

a. Preparation Stage
   This stage included proposal preparation, development of research instruments, and obtaining research permission.
b. Data Collection Stage
   Medical records of ARI patients during the 2024 period were collected and evaluated using observation sheets.
c. Data Processing and Analysis Stage
   The collected data were checked, classified, tabulated, and analyzed statistically to determine the percentage accuracy of antibiotic prescribing.
d. Report Writing Stage
   The final stage involved interpreting the research findings and preparing the research report in the form of a thesis.

FINDING AND DISCUSSION

Findings

This study analyzed 930 antibiotic prescriptions for Acute Respiratory Infection (ARI) patients at Puskesmas Paal V Kota Jambi during 2024. The analysis included the types of antibiotics prescribed, ARI diagnoses, prescribing appropriateness, and the relationship between diagnosis and antibiotic selection based on Pharmaceutical Care Guidelines for Respiratory Tract Infections.

a. Types of Antibiotics Prescribed

Table 1. Types of Antibiotics Prescribed for ARI Patients

No	Antibiotic Type	Frequency	Percentage
1	Cefadroxil	12	1.29%
2	Ciprofloxacin	91	9.80%
3	Amoxicillin	767	82.50%
4	Cotrimoxazole	57	6.10%
5	Metronidazole	1	0.10%
6	Erythromycin	2	0.20%
	Total	930	100%

Amoxicillin was the most frequently prescribed antibiotic (82.5%), followed by Ciprofloxacin (9.8%) and Cotrimoxazole (6.1%). Other antibiotics were prescribed in very small proportions (<2%). These findings indicate that Amoxicillin remained the first-line antibiotic therapy for ARI management.

b. Distribution of ARI Diagnoses

Table 2. Distribution of ARI Diagnoses

No	Diagnosis	Frequency	Percentage
1	Pneumonia	783	84.20%
2	Mild Pneumonia	0	0%
3	Severe Pneumonia	89	9.57%
4	Non-Pneumonia	58	6.23%
	Total	930	100%

Pneumonia was the dominant diagnosis with 783 cases (84.20%), followed by Severe Pneumonia (9.57%) and Non-Pneumonia (6.23%). No cases of Mild Pneumonia were identified.

c. Appropriateness of Antibiotic Prescribing

Table 3. Appropriateness of Antibiotic Prescribing

No	Prescribing Indicator	Frequency	Percentage
1	Appropriate Indication	876	94.19%
2	Appropriate Drug Selection	876	94.19%
3	Appropriate Patient	876	94.19%
4	Appropriate Dosage	856	92.04%
5	Appropriate Interval	876	94.19%

The results showed that the appropriateness of indication, drug selection, patient suitability, and administration interval each reached 94.19%, while dosage appropriateness reached 92.04%. Overall, antibiotic prescribing practices were categorized as very good and consistent with therapeutic guidelines.

d. Chi-Square Analysis

Tabel 4. Case Processing Summary

Cases	Valid	Missing	Total
N	930	0	930
Percentage	100%	0%	100%

All 930 data samples were valid without missing data, indicating that the dataset was suitable for statistical analysis.

Crosstabulation of Antibiotic Type and Diagnosis

Table 5. Crosstabulation Between Antibiotic Type and ARI Diagnosis

Antibiotic Type	Pneumonia	Severe Pneumonia	Non-Pneumonia	Total
Amoxicillin	767	0	0	767
Ciprofloxacin	16	75	0	91
Other Antibiotics	0	14	58	72
Total	783	89	58	930

Amoxicillin was predominantly prescribed for Pneumonia cases, while Ciprofloxacin was mainly used in Severe Pneumonia cases. Other antibiotics were mostly prescribed for Non-Pneumonia cases.

Chi-Square Test Results

Table 6. Chi-Square Test Results

Test	Value	df	p-value
Pearson Chi-Square	1407.863	4	0.000
Likelihood Ratio	853.424	4	0.000
Linear-by-Linear Association	845.190	1	0.000

The Chi-Square test showed a significant relationship between ARI diagnosis and antibiotic type ($p < 0.05$). This finding indicates that antibiotic selection was significantly associated with the patient's clinical diagnosis.

Discussion

The results demonstrated that Amoxicillin was the most frequently prescribed antibiotic for ARI patients at Puskesmas Paal V Kota Jambi. This finding is consistent with Pharmaceutical Care Guidelines recommending Amoxicillin as the first-line therapy for respiratory tract infections due to its effectiveness, affordability, and safety profile. The limited use of broad-spectrum antibiotics such as Ciprofloxacin also indicates efforts to reduce irrational antibiotic use and minimize antibiotic resistance risk.

Pneumonia was identified as the most common ARI diagnosis, accounting for 84.20% of cases. The high prevalence of Pneumonia explains the dominance of Amoxicillin prescribing because lower respiratory tract infections commonly require antibiotic therapy. Severe Pneumonia cases were more frequently treated with Ciprofloxacin, reflecting clinical adjustments based on disease severity.

The evaluation of prescribing appropriateness revealed high percentages for indication, drug selection, patient suitability, dosage, and administration interval. These findings indicate that healthcare providers have generally implemented rational antibiotic prescribing practices according to therapeutic standards. However, dosage appropriateness remained slightly lower than other indicators, suggesting that dosage monitoring and adjustment still require attention to optimize therapeutic outcomes.

The Chi-Square analysis confirmed a statistically significant relationship between ARI diagnosis and antibiotic type ($p = 0.000$). This result demonstrates that antibiotic prescribing was based on clinical considerations rather than random selection. Nevertheless, antibiotic prescribing in Non-Pneumonia cases should still be monitored carefully because some ARI cases are viral in origin and may not require antibiotic therapy. Irrational antibiotic use in such conditions may increase the risk of antibiotic resistance.

CONCLUSIONS

This study aimed to evaluate antibiotic prescribing practices for Acute Respiratory Infection (ARI) patients at Puskesmas Paal V Kota Jambi during the 2024 period based on Pharmaceutical Care Guidelines for Respiratory Tract Infections. Based on the results of the study and statistical analysis that have been conducted, it can be concluded that Amoxicillin was the most frequently prescribed antibiotic, accounting for 82.5% of total prescriptions. This finding indicates that Amoxicillin remains the primary first-line therapy for ARI management and its use has generally been consistent with pharmaceutical care guidelines. Other antibiotics prescribed included Ciprofloxacin, Cotrimoxazole, Cefadroxil, Metronidazole, and Erythromycin, although in relatively smaller proportions.

The majority of ARI cases identified in this study were Pneumonia and Severe Pneumonia, indicating that antibiotic therapy was clinically justified in most patients. The evaluation of prescribing appropriateness showed that the accuracy of indication, drug selection, patient suitability, and administration interval each reached 94.19%, while dosage accuracy reached 92.04%. These findings demonstrate that antibiotic prescribing practices at the Paal V Public Health Center were generally categorized as very good and largely in accordance with therapeutic standards and pharmaceutical care principles.

The Chi-Square analysis revealed a significant relationship between ARI diagnosis and the type of antibiotic prescribed ($p = 0.000$), indicating that antibiotic selection was significantly associated with clinical diagnosis and disease severity. This result suggests that antibiotic prescribing was not performed randomly but was based on rational therapeutic considerations.

It is expected that healthcare providers at the Paal V Public Health Center continue to maintain rational antibiotic prescribing practices and improve monitoring of dosage adjustment and antibiotic duration to optimize therapeutic effectiveness and minimize the risk of antibiotic resistance. The results of this study are also expected to provide additional information and

scientific insight regarding the evaluation of antibiotic prescribing practices in primary healthcare facilities. Future researchers are encouraged to develop this study further by including additional variables related to rational antibiotic use, patient outcomes, and antimicrobial resistance patterns in healthcare services.

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REFERENCES

Anak Agung Pradnya Paramitha Vidiani, A., Aswara, L. I., Adrianto, M., & Wibowo, A. D. K. (2023). Evaluasi peresepan antibiotik pada pasien ISPA pediatri metode ATC/DDD. *Jurnal Kesehatan Amanah, 7*(2), 29–38. https://doi.org/10.57214/jka.v7i2.735

Darmayanti, E. Y., Hasina, R. H., & Puspitasari, C. E. P. (2020). Evaluasi penggunaan antibiotik pada pasien balita dengan diagnosa infeksi saluran pernapasan atas di Puskesmas Koni Kota Jambi. *Jurnal Sains dan Kesehatan, 3*(4), 586–592.

Departemen Kesehatan RI. (2005). *Pharmaceutical care untuk penyakit infeksi saluran pernapasan*. Direktorat Bina Farmasi Komunitas dan Klinik. Kementerian Kesehatan RI

Dewi, R., Sutrisno, D., & Medina, F. (2020). Evaluasi penggunaan antibiotik infeksi saluran pernapasan atas pada anak di Puskesmas Olak Kemang Kota Jambi tahun 2018. *PHARMACY: Jurnal Farmasi Indonesia (Pharmaceutical Journal of Indonesia), 17*(1), 158–167. https://doi.org/10.30595/pharmacy.v17i1.6936

Fitri, A. S. H. S. K. A., Falani, S. K. L. S. I., & Lestari, N. A. F. A. H. H. (2023). *Metodologi penelitian kuantitatif* (A. Karim, Ed.). Yayasan Kita Menulis. Yayasan Kita Menulis

McHugh, M. L. (2013). The Chi-square test of independence. *Biochemia Medica, 23*(2), 143–149. http://dx.doi.org/10.11613/BM.2013.018

Tumurang, M. (2024). *Metodologi penelitian* (L. A. Alifariki, Ed.). PT Media Pustaka Indo. PT Media Pustaka Indo

Prof Dr Ridhahani M Pd. (2020). *Metodologi penelitian dasar bagi mahasiswa dan peneliti pemula* (A. Juhaidi, Ed.). Pascasarjana Universitas Islam Negeri Antasari.

Riset Kesehatan Dasar (Riskesdas). (2018). *Laporan Riskesdas 2018 nasional*. Lembaga Penerbit Balitbangkes. Riskesdas 2018 Nasional

World Health Organization. (2020). *Severe acute respiratory infection treatment centre*. World Health Organization. World Health Organization