



## Evaluation of the Use of Pneumonia Specific Antibiotics in the COVID - 19 Pandemic Situation at Glodok Surya Pharmacy Jakarta

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### ABSTRACT

The COVID-19 pandemic dominantly affects the use of antibiotics typical of pneumonia in particular at the Surya Glodok Pharmacy which is located in the trading area, Kota Tua, West Jakarta. The present study attempts to evaluate the use of pneumonia-specific antibiotics used during the COVID-19 pandemic at the Surya Glodok Pharmacy, Jakarta. 72 samples were taken retrospectively who met the inclusion criteria (complete prescriptions included gender and age and used pneumonia-specific antibiotics, or were excluded from pulmonary specialists or pulmonary hospitals, but not with comorbid tuberculosis). Data analysis was cross-sectional using SPSS software using one-way ANOVA analysis. There are 7 types of specific pneumonia antibiotics, namely: azithromycin (30.6%), ciprofloxacin (26.4%), levofloxacin (16.7%), amoxicillin plus clavulanate (11%), doxycycline (4%), moxifloxacin (2%), and cefixime plus azithromycin (2%). Patients' age was divided into 4 groups, namely: age <18 years (1.4%), age 18-40 years (29.2%), age 41-60 years (62.5%) and age > 60 years (6.9%). Gender was dominated by 51.39% female and 48.61% male. The most selected antibiotic was the azithromycin as macrolide group, dominated by the female in the middle class (productive age) with high activity outside the home.



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### INTRODUCTION

The outbreak of the novel severe acute respiratory syndrome coronavirus (SARS-CoV-2) started in China in December 2019. COVID-19 patients at presentation show a wide spectrum of clinical and pathological involvement. The COVID-19 pandemic dominantly affects the use of pneumonia-specific antibiotics typical in pharmaceuticals. The rapidly

escalating COVID-19 pandemic has focused attention on the treatment of a patient with pneumonia with an acute respiratory infection. Pharmacy service includes the management of pharmaceutical preparations, medical devices, and medical consumables, and clinical pharmacy. One of the most visited places to fulfill this demand is the Glodok area, which is known as the center of the drug trade in the city of Jakarta. Glodok is considered as one of the old city areas that have been able to survive since the 18<sup>th</sup> century without changes that damage the element of authenticity [1]. Many shops are serving traditional Chinese medicine and medicines originating from China. Starting in December 2019, cases of pneumonia were reported in Wuhan, Hubei Province. In less than a month, the spread of this disease was very fast [2]. In Indonesia, it was reported for the first time on December 14, 2019. The COVID-19 pandemic can cause pneumonia or pneumonia with early symptoms of shortness of breath [3]. This infection attacks the respiratory tract and currently pneumonia is a major health problem in Indone-

sia [4]. Hence the present study attempts to evaluate the use of pneumonia-specific antibiotics used during the COVID-19 pandemic at the Surya Glodok Pharmacy, Jakarta.

## METHODS

The method used in this research is cross-sectional. First, data collection was carried out in a certain, short period (retrospective), and secondly, the process of observing the study subjects was carried out only once in a predetermined period. Inclusion criteria: a prescription with pneumonia-specific antibiotics from April to September 2020 during the COVID-19 pandemic at the Surya Glodok Pharmacy Jakarta that included age and gender, had no comorbidities of tuberculosis, or was written by a pulmonary specialist or lung hospital. Exclusion criteria: all prescriptions from April to September 2020 during the COVID-19 pandemic at Surya Glodok Pharmacy Jakarta. This research was conducted after obtaining permission from the Ethics Committee of Esa Unggul University with the number: 0112-21.112/DPKEKEP/FINAL-EA/UEU/IV/2021. Analysis of data was performed with Statistical Product and Service Solution (SPSS) software using one-way ANOVA analysis. A  $p$ -value  $< 0.5$  was considered significant.

## RESULTS

The research was carried out from January to March 2021, at the Surya Glodok Pharmacy, Jakarta. Data collection was carried out for 6 months, data collection retrospectively in Surya Glodok Pharmacy Jakarta; it was calculated from April 2020 – September 2020. The study started in April because the first large-scale social restrictions began to apply and research data was ended in September due to the tightening during the two weeks of large-scale social restrictions.

As evident from Figure 1 and Figure 2, it can be concluded that the use of a typical type of antibiotic pneumonia in the top three are: azithromycin (30.6%) or 22 people, ciprofloxacin (26.4%) or 19 people, levofloxacin (16.7%) or 12 people. The results of the same study were also found in the study reported by Yosefien et al., (2020) which found azithromycin was chosen as an effective pneumonia antibiotic (CAP) because of its activity against gram-negative bacteria, especially *Hemophilus influenza* with a long half-life and a single daily dose [5]. One of the advantages of azithromycin is that it is one of the macrolides that is active against a variety of micro-organisms, gram-positive cocci, anaerobic bacteria, and typi-

cal pathogens [6]. In the Wayne A. Ray journal “Azithromycin for treatment of community-acquired pneumonia”, an observational study of patients with community-acquired pneumonia reported that macrolide-based therapy was associated with lower 90-day mortality than fluoroquinolone therapy, due to the beneficial immune effects of macrolides.

The use of levofloxacin as a typical antibiotic for pneumonia was also in the top three. It was also reported by Faizah et al., (2019) that in the top three, the most common types of antibiotics used for pneumonia are ceftazidime, levofloxacin, and ceftriaxone [7]. The types of antibiotics typical of pneumonia that are used the least while are moxifloxacin and  $\beta$ -lactam plus macrolide, which are only 2.8% each. Similar findings were also reported by Elvina et al., (2017) the use of very low amounts was  $\beta$ -lactam plus a macrolide (3.13%), and aminoglycosides with fluoroquinolones (1.04%) [8]. Although the use of  $\beta$ -lactam plus macrolides is small, the combination of the two is very effective in treating moderate and high severity (CURB 65) patients [9].

Based on the Table 2 the most antibiotics pneumonia used related on range age is as follows: on age under 18 years used azithromycin is as much 1.4%. On age between 18-40 years also used azithromycin as much 12.5%. On age between 41-60 years used ciprofloxacin as much as 19.4% and azithromycin in second place as 16.7%. On age above 60 years old most widely used amoxicillin-clavulanate, 4.2%. The same result was observed with Mulyana et al., (2019) study the use of antibiotics, especially for the elderly, was dominated by the use of amoxicillin-clavulanate [10].

The results of this study indicate the use of antibiotics for pneumonia in the percentage of types Women's sex is more than that of men. This thing can be influenced by routine. There are many activities of women outside the home such as daily shopping, going to the market, social activities PKK (Pembinaan Kesejahteraan Keluarga, Empowerment of Family Welfare), communication, and close relationships with the neighborhood in the area where they live. With high intensity of social interactions, women are more susceptible to infection with respiratory tract diseases. In contrast to Novita's research, men are more likely to be infected with pneumonia due to smoking habits which reduce lung function and body resistance, thus triggering infection [11].

Based on the Table 1, it was found that the most widely used type of pneumonia antibiotic based on male sex was: azithromycin with the highest dose used was 13.9%, followed by lev-

**Table 1: Guideline for the use of pneumonia-specific antibiotics according to American Thoracic Society (ATS)/Infectious Diseases Society of America (IDSA) 2016**

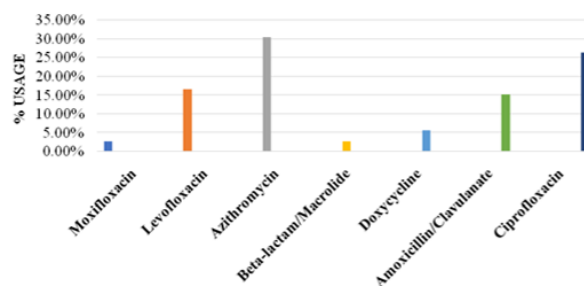
Condition	Type antibiotic	Dosage
Previously health no risk factors for drug-resistant	A macrolide ( Azithromycin, Clarithromycin, or Erythromycin) → Strong recommendation.	500 mg daily
	Doxycycline (→ weak recommendation)	100 mg twice daily
Presence of comorbidities such as chronic heart, lung, liver, or renal disease, diabetes mellitus, alcoholism, malignancies, asplenia, immunosuppressing drugs	A respiratory Fluoroquinolone (Moxifloxacin, Gemifloxacin, Levofloxacin)→ strong recommendation.	Moxifloxacin 400 mg daily, Gemifloxacin 320 mg daily, Levofloxacin 750 mg daily.
	β-Lactam Plus Macrolide → strong recommendation or Amoxicillin-Clavulanate	Amoxicillin -Clavulanate 2 g twice daily
	Alternative: Ceftriaxone, Cefpodoxime, Cefuroxime	500 mg twice daily
	Doxycycline is an alternative to the macrolide	100 mg twice daily

ofloxacin 11.1%, while moxifloxacin and β-lactam + macrolides became the most effective antibiotics and the least used is 1.4%. The results of the same study in the journal Rachmitwati Siti, that levofloxacin is the second most common pneumonia antibiotic used [12]. In this study, the measurement of the accuracy of the doses was compared with the Standard of the Ministry of Health 2011 [Figure 3]. The results showed that the use of antibiotics in patients with pneumonia had been used with the correct dose.

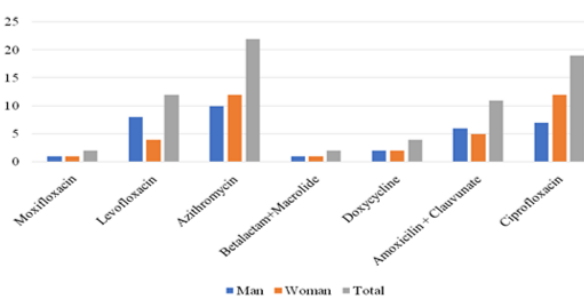
Based on the data frequency table, it was found that 94.4% or 68 people have used antibiotics for pneumonia with the correct dose and there is 5.6% or a total of 4 people have used antibiotics for pneumonia at the wrong dose. Improper dosing can result in non-curable disease, increased risk of side effects, bacterial resistance, and can increase treatment costs [13].

Based on the data quantity table, it was found that 36.1% or 26 people have used antibiotics for pneumonia with proper administration, and there is 63.9% or as many as 46 people have used antibiotics for pneumonia with the provision is not correct. The result of antibiotic therapy depends on the type of antibiotics and the clinical condition of the patient and the results of the microbiological examination [14].

The same result was found that advisedly “Antibiotic Utilization IOF Pneumonia in Puskesmas Kemiling Bandar Lampung” Period January-October 2013 the correct standard giving dose was 79.72%, and



**Figure 1: Percentage of Antibiotics Used for Pneumonia at Surya Glodok Pharmacy Jakarta from April-September 2020**

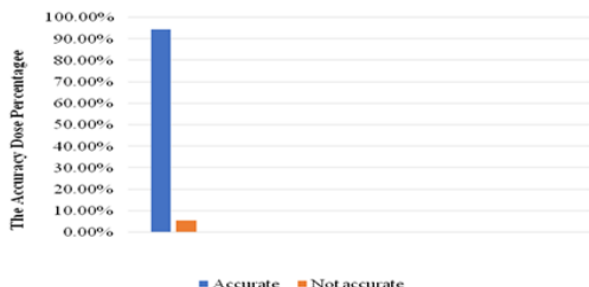


**Figure 2: Percentage of Antibiotics Used for Pneumonia at Surya Glodok Pharmacy Jakarta from April-September 2020 and Correlation with Age Group**

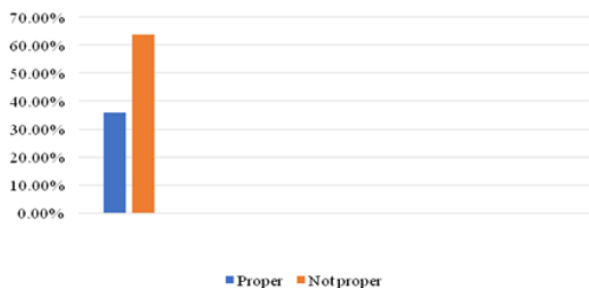
the right duration of treatment against the standard for the treatment of pneumonia is 81.95%. Accuracy when administering antibiotic pneumonia, based on the Standard Guideline IDSA (Infectious Disease Society of America) or PIONAS (Pusat Informasi Obat Nasional; National Drug Information Center)

**Table 2: Percentage of Antibiotics Used for Pneumonia at Surya Glodok Pharmacy Jakarta from April-September 2020 and correlation with Age Group**

Type Pneumonia	Antibiotics	< 18 years	18-40 years	41-60 years	> 60 years	Total
Moxifloxacin		0 0%	1 1.4%	1 1.4%	0 0%	2 2.8%
Levofloxacin		0 0%	2 2.8%	10 13.9%	0 0%	12 16.7%
Azithromycin		1 1.4%	9 12.5%	12 16.7%	0 0%	22 30.6%
$\beta$ -lactam and Macrolide		0 0%	0 0%	2 2.8%	0 0%	2 2.8%
Doxycycline		0 0%	1 1.4%	2 2.8%	1 1.4%	4 5.6%
Amoxicillin and clavulanate		0 0%	4 5.6%	4 5.6%	1 1.4%	11 15.3%
Ciprofloxacin		0 0%	4 5.6%	14 19.4%	5 6.9%	19 26.4%
Total		1 1.4%	21 29.2%	4 6.25%	5 6.9%	72 100%



**Figure 3: Accuracy of Dose**



**Figure 4: Accuracy Giving Time**

shows that in this research when given antibiotics pneumonia in prescription at Surya Glodok Pharmacy Jakarta is during COVID-19 pandemic is not correct [Figure 4].

**Limitation**

The researcher suggests that a similar evaluation be held in several other pharmacies from different geographical locations in Jakarta.

**CONCLUSION**

After going through the process of empirical observations, theoretical studies, and data analysis, it can be concluded that a conclusion from this research is as follows: the gender most infected with pneumonia is female; the type of antibiotic most widely used during the COVID-19 pandemic is the azithromycin sequence, ciprofloxacin in second place and levofloxacin in the third place. The age range of antibiotic users typical of pneumonia is the age group of 41-60 years. The type of antibiotic that is mostly used by men is Azithromycin, followed by levofloxacin, while the type of antibiotic that is most widely used by women is azithromycin and ciprofloxacin. The use of antibiotics for pneumonia, which was purchased at the Surya Glodok Pharmacy Jakarta during the COVID-19 pandemic, was used at the correct dose, but at the wrong length of time given (quantity).

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### Conflict of Interest

The authors declare that there is no conflict of interest.

### REFERENCES

- [1] Sulisty A. Jakarta Kotatua China Tourism: An overview of the potential development of urban tourism in Indonesia. *Jurnal Sosial dan Humaniora*. 2021;4(1):75-92.
- [2] Susilo A, Rumende CM, Pitoyo CW, et al. Coronavirus disease 2019: Review of current literatures. *Jurnal Penyakit Dalam Indonesia*. 2020; 7:45-67.
- [3] Pratiwi B, et al. Important information on COVID-19 treatment. *Sekolah Farmasi ITB*. 2020;;1-4.
- [4] Siregar DA. Factors Related to the event of Pneumonia in toddlers in the regional general hospital (RSUD) Padangsidempuan city in 2020. *Jurnal Ilmiah Kohesi*. 2020;4:9.
- [5] Donsu YC, Hasmono D. Azithromycin overview in Corona Virus Disease 2019 (COVID-19). *Pharmacon: Jurnal Farmasi Indonesia*. 2020; 17:133-180.
- [6] Yoshioka D, Kajiwara C, Ishii Y, et al. Efficacy of  $\beta$ -Lactam-plus-Macrolide Combination Therapy in a Mouse Model of Lethal Pneumococcal Pneumonia. *Antimicrob Agents Chemother*. 2016;60:6146-54.
- [7] Faizah AK, Putra ON. Qualitative evaluation of antibiotic therapy in Pneumonia patients at teaching hospital Surabaya Indonesia. *Jurnal Sains Farmasi & Klinis*. 2019;6:129-162.
- [8] Elvina R, Rahmi N, Oktavira SA. Evaluation of antibiotic use in Community-Acquired Pneumonia (CAP) patients at the inpatient installation of hospital "X" Jakarta. *Pharmacy: Jurnal Farmasi Indonesia (Pharmaceutical Journal of Indonesia)*. 2018;14:64-74.
- [9] Ito A, Ishida T, Tachibana H, et al. Azithromycin combination therapy for community-acquired pneumonia: propensity score analysis. *Sci Rep*. 2019;9:18406.
- [10] Mulyana R. Antibiotic Therapy in elderly Pneumonia. *Jurnal Kesehatan Andalas*. 2019;8:172-177.
- [11] Andayani N. Mortality rate and prognosis of community pneumonia patients with the CURB-65 scoring system in the pulmonary inpatient ward Dr. Zainoel abidin banda aceh. *Jurnal Kedokteran Syiah Kuala*. 2014;14:14-19.
- [12] Rachmitwati S. Description of the pattern of antibiotic use in Pneumonia patients at the Nuhammadiyah islamic hospital Sumberrejo Kab. Bojonegoro. 2018;74:55-61.
- [13] Wahidah LK, Wahyuni NT, Putri DM. Evaluation of the use of Pneumonia antibiotics using the ATC/DDD method in pediatric patients in the inpatient unit of the hospital. Dr. A. Dadi Tjokrodipo Bandar Lampung in 2019. *JFL: Jurnal Farmasi Lampung*. 2020;9:99-108.
- [14] Juwita DA, Arifin H, Yulianti N. Retrospective Descriptive study of antibiotic dosing regimens for pediatric Pneumonia patients at RSUP. Dr. M. Djamil Padang. *Jurnal Sains Farmasi & Klinis*. 2017;3:134-140.

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