



Analysis of Drug Management at Tegal City Pharmaceutical Installation

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ARTICLE INFO

Submitted : 15-08-2023

Revised : 03-02-2024

Accepted : 03-05-2024

Published : 30-06-2024

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ABSTRACT

Background: Medicine is one of the most essential elements in health service efforts. Good drug management will affect the availability of drugs and improve the degree of health in the community.

Objectives: This study aims to determine the effectiveness and efficiency of drug management at the Tegal City Pharmaceutical Installation in 2021 related to compliance with the Indonesian Ministry of Health and WHO indicators.

Methods: This research is descriptive research with a quantitative approach. Data was taken retrospectively through document tracing and supplemented with qualitative data through interviews to deepen findings in the field. Data obtained and the results of interviews with the Head of Installation and pharmaceutical personnel, totaling five respondents, will then be compared with standard indicators from the Indonesian Ministry of Health and WHO. Data analysis in this study used indicators of selection, procurement, distribution, and use of drugs. The values of the indicators that have been obtained are subsequently compared with the existing standard values.

Results: The results of drug management research at the Tegal City Pharmaceutical Installation are at the selection stage of proposing drugs to Fornas. The procurement stage of drug suitability with Fornas is 96.4%, the fund allocation percentage is 92%, and the planning accuracy is 95.7%. The distribution stage of the level of drug availability 12-18 is 13.92 months, the accuracy of the number of distributions to the Puskesmas is 100%, the percentage of drugs experiencing empty stock, dead stock, and overstock is 0%, the percentage of damaged and expired drugs is 0%. The use stage of drug items per prescription is 3.5 drug items, the percentage of antibiotic use in non-specific patients is 30.7%, the percentage of non-pneumonia Acute Respiratory Infections (ARI) antibiotic use is 34.2%, and myalgia injection use is 0%.

Conclusion: The conclusion of drug management at the selection, procurement, distribution, and use stages in 2021 carried out at the Tegal City Pharmaceutical Installation has yet to follow standards. Of the 14 indicators studied, only 8 follow the standard, and 6 other indicators still need compliance to evaluation.

Keywords: City Pharmaceutical Installation; Drug management cycle; Indicators.

INTRODUCTION

Medicine is a basic human need that is irreplaceable in health services that are useful for saving lives and improving the quality of health. Access to medicines, especially essential medicines, is one of the human rights under one of the objectives of the 2006 National Drug Policy (KONAS), namely ensuring the availability, equity and affordability of drugs, especially essential medicines, so that people obtain medicines when needed at the right place and time.¹ The availability of medications for health services is greatly influenced by drug accessibility.

Analysis of Drug Management at Tegal City Pharmaceutical Installation

Based on the strategy plan of the Republic of Indonesia 2019-2024, there was an increase in the availability of drugs and vaccines in 2019 by 94.22% from 79.38% in 2015. However, the availability of drugs still cannot be evenly distributed in each province. This difference illustrates that drug logistics management still needs to be improved.²

One of the events that has a significant impact on the current availability of drugs is the outbreak of the COVID-19 pandemic. Coronavirus Disease 2019 (COVID-19) is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). SARS-CoV-2 is a new type of coronavirus that has never been identified in humans.³ Judging from the spread of COVID-19, which has almost reached all provinces in Indonesia with an increasing number of cases or deaths, nearly all sectors are affected by this outbreak. As activities in various regions are restricted, the sustainability of the pharmaceutical supply chain becomes an issue. If this outbreak continues, the supply of medicines and pharmaceutical raw materials may decline, leading to a large-scale supply shortage.⁴

Research on drug management analysis at the Tegal City Pharmaceutical Installation has never been carried out before, so in the process of drug management, it is possible for non-compliance with standards. Drug management in pharmaceutical installations in other districts/cities has been carried out by Gurning et al, Boku et al, Aisah et al, and Abadi, Suryagama, Nugroho, and Budiarmo.^{5,6,7,8,9,10,11} The difference between this study and previous drug management studies is in the research variables. The variables of this study include the stages of selection, procurement, distribution, and use. This study aims to determine whether drug management at the Tegal City Pharmaceutical Installation is in accordance with the standards set by the Indonesian Ministry of Health and WHO and determine what factors influence drug management.^{12,13}

METHODS

Study design

This research is descriptive research with a quantitative approach. Data was taken retrospectively through document tracing and supplemented with qualitative data through interviews to deepen findings in the field and comprehensively understand the phenomenon studied by comparing standards from the Indonesian Ministry of Health and WHO.

Population and samples

The research subjects as informants were 5 respondents: the Head of the Tegal City Pharmaceutical Installation and four officers related to the drug management process. The samples used in this study are all drug reporting indicators of Puskesmas and COVID-19 drugs related to drug procurement indicators.

Study instruments

The data collection instrument used by the study used indicator sheets and checklists of drug management based on the Ministry of Health of the Republic of Indonesia in 2010, pharmaceutical management training materials in district/city pharmaceutical installations and rational drug use according to WHO.

Data collection

The primary data source used in the selection stage research is proposing drugs to Fornas. Procurement is the conformity of items with the national formulary, the allocation of procurement funds, and the planning accuracy. Distribution is the level of drug availability, the accuracy of the amount of distribution to Puskesmas, empty stock items, fewer stock items (1 to <12 months), safe stock (12-18 months), excessive stock items (>18 months), non-prescription drugs (>3 months), expired drug values, and damaged drug values. Use is the use of rational drugs consisting of drug items per prescription, the use of antibiotics in non-specific diarrhoea patients and non-pneumonia ARI, and the use of myalgia injections. Secondary data is obtained by observing documents consisting of annual drug planning and usage reports, financial department budget reports, drug procurement reports, purchase books, damaged/expired drug reports, order letters, and pharmaceutical installation profiles. Support management consists of organizational structure, the person in charge, the amount of human resources, and administrative means.

Data Analysis

Analysis of this research data is obtained from the results of interviews and documentation by organizing data into categories, describing it into units, synthesizing, arranging it into patterns, and sorting out which ones

are important. It will be learned and then concluded so that they are understood by themselves and others. Data analysis in this study used indicators of selection, procurement, distribution, and use of drugs. The values of the indicators that have been obtained are subsequently compared with the existing standard values.

RESULTS AND DISCUSSION

Selection

The indicator used is proposing to Fornas. The goal is to avoid drugs that have no therapeutic value, reduce the number of types of drugs, and increase drug efficiency. Offering drugs to Fornas is the process of submitting drug standards by the Puskesmas, which will be used at the Puskesmas itself. Submissions are made for drugs listed in Fornas, where the submission process will be reviewed by the PI (Pharmaceutical Installation) of Tegal City and the selection of drugs on the E-Catalogue. Indicators can be seen in Table I.

Procurement

Item conformity to Fornas

This indicator aims to determine the level of drug suitability following the National Formulary in Tegal City Pharmacy Installation. The calculation is done by dividing the drug items following Fornas by the drug items available at the Pharmaceutical Installation multiplied by 100%. Based on data collected from the drug inventory report 2021 in Tegal City Pharmacy Installation, the indicator drug items available at the Pharmaceutical Installation are compared to the National Formulary. The calculation value with the indicator of the suitability of available drug items with Fornas is 96.7%, while according to the indicator from the Ministry of Health, it is 100% (Table II). These results can conclude that drug planning has yet to follow standards. Research from Lutsina & Lette explains that drug selection in Puskesmas must refer to Fornas related to meeting drug needs at Puskesmas.¹⁴ In contrast to the results of Anggriani research, which demonstrated that the suitability of drugs with Fornas is as much as 77.01%, this is due to the lack of accuracy and consideration in the selection of drug items at the Puskesmas.¹⁵ Based on interviews conducted, indicator drug items that are not available at the Tegal City Pharmaceutical Installation, namely dihydroartemisin + paperquin and primaquin drug items, include drugs for malaria. Based on the interview results, the cause of the absence of malaria drugs is that Tegal City is not an endemic area, and malaria cases in the Tegal City area have not been found. Therefore, planning for malaria drugs is abolished.

Percentage of Drug Procurement Fund Allocation

Percentage indicator of drug procurement fund allocation to compare the total funds of Tegal City Pharmacy Installation with drug procurement funds. The total budget funds for Tegal City Pharmacy Installation in 2021 are IDR 1,113,192,364, where the entire budget becomes the budget allocation. Based on these data, it is known that the total funds in Tegal City Pharmacy Installation with drug procurement funds at pharmaceutical installations. The allocation of funds shows that the budget for drug procurement is 92% of the total budget for pharmaceutical installations outside the medical device budget (Table II). Total drug procurement funds are available funds allocated for drug procurement. The percentage value of drug procurement shows that the need for procurement fund allocation has not met existing standards, according to the Indonesian Ministry of Health, ideally 100%. This result is in line with research by Ta'au, where it was found that the allocation of funds obtained was 96.49%; this shows a non-conformity with the Indonesian Ministry of Health 2010 standards. The reason for the discrepancy in the allocation of funds that occurs is due to changes in disease patterns that have an impact on adjustments to the budget of funds obtained from the government.¹⁶ Research by Carinah received budget results in 2021 at UPTD Farmasi Subang Regency, which still do not meet the standards; this happened because of several budget refocusing related to the COVID-19 pandemic.¹⁷ Research conducted by Ariyani said the same thing; the previously planned budget was finally refocused and reallocated by the government, which caused the budget from the centre to eventually have to be cut so that it had an impact on the ratio of financial independence.¹⁸

Based on interviews that have been conducted, this is about the percentage of drug procurement fund allocation that has not been following the indicators of the Indonesian Ministry of Health because several drugs are not recorded due to vacancies in distributors due to the high demand for a drug during the COVID-19 pandemic, for example for dexamethasone, vitamin C, and vitamin D drugs. The discrepancy in the allocation of funds obtained is due to the budget used adjusted to the budget received from the government. In addition, during the pandemic, several budgets were cut, which also had an impact on the allocation of funds.

Table I. Selection Indicator

Indicator	Result	Standard
Proposing Drugs to Fornas	Yes	Yes

Table II. Procurement Indicators

Indicators	Results	Standard
Item Conformity to Fornas	96.4%	100%
Percentage of Drug Procurement Fund Allocation	92.0%	100%
Percentage of COVID-19 Drug Fund Allocation	99.9%	100%
Accuracy of Drug Planning	95.7%	100%

In the allocation of funds for COVID-19 drugs, parties from Tegal City Pharmacy Installation also purchase drugs outside the grant from the centre; this is done to prevent shortages of drugs provided by the central government. The percentage of accuracy of planning funds with procurement realization showed a result of 99.9%. The results of the planning accuracy indicator are less than the standard set by the Indonesian Ministry of Health, which is 100%. Based on the interview results, this is due to the difference in prices at the time of independent calculation and the price determined by the distributor.

Accuracy of Drug Planning

The percentage of suitability of procurement planning funds showed a yield of 95.7%. The total procurement fund in question is a fund that is only for the procurement of drugs, while the total drug use fund is the funds obtained from the results of drug use in one year. The planning accuracy indicator gets results that are less than the standard set by the Indonesian Ministry of Health, which is 100% (Table II); this can be caused by changes in prescribing patterns and disease patterns influenced by the COVID-19 pandemic. This result is not much different from research from Sariah in 2021 also explained that the accuracy of planning at the Banjarmasin City Pharmaceutical Installation also got a percentage of 68% due to the number of disease cases decreasing or the prescribing doctor moving tasks so that the drugs planned and available at the Puskesmas were rarely prescribed or not prescribed anymore.¹⁹ This is also in line with the results of the interviews conducted, namely the inaccuracy of planning that occurs caused by several things including recipe writing patterns, as well as changes in disease patterns due to the COVID-19 pandemic.

Distribution

Drug Availability

This indicator determines the adequacy of drugs in Tegal City Pharmacy Installation that is sustainable for community services. Medicines provided for health services in the city must follow needs, which means that the number of drugs available at the City Pharmacy Installation must be equal to the stock time of arrival of drugs. The percentage value in the calculation of drug availability indicators at the Tegal City Pharmacy Installation in 2021 shows that the level of drug availability is 13.92 months, whereas the standard value is 12-18 months, which means that the majority of drugs are still in the safe category. Based on the Indonesian Ministry of Health standards, if the value of the calculation of drug availability is <12 months, the availability value is included in the understock category, and if the value of drug availability is >18 months, it is included in the overstock category. The names of drug items that experience an availability level of <12 months are amoxicillin 125/5ml, amoxicillin 500mg, magnesium sulfate 40%, methylethergomethrin 0.125, anti-tuberculosis drug category 1, and paracetamol 500mg, this is due to the planning that is not following the method of consumption so that if there is a change in disease patterns and prescribing will affect the planning which results in drug availability will be hampered. Based on the value of the availability of drug categories in Tegal City Pharmacy Installation, it is known that the COVID-19 pandemic did not significantly impact the availability of drugs in Tegal City Pharmacy Installation in 2021.

Research from Amiruddin & Septarani A, entitled Study on Drug Availability at Meo-Meo Health Center in Baubau City stated that the availability of drugs at Meo-Meo Health Center was not following standards, which was due to non-fulfilment of drugs submitted by Usage Report and Drug Request Sheet (LPLPO) by UPTD Pharmaceutical Installation. The lack of availability of drugs at the Puskesmas creates a shortage of drugs that

can harm the Puskesmas because many prescriptions are not served, so patients leave the Puskesmas, which can reduce visits and income of the Puskesmas.²⁰

Based on the interviews conducted, factors that affect the results of the level of drug availability, namely the number of drugs in a year, the average monthly use of drugs, and drug waiting time. With these factors, it can be known that the stock of drugs in a year is in the safe category, but if there is a shortage of some drugs or if the drugs needed by the Puskesmas experience a shortage, the Puskesmas will share drugs with Puskesmas that have more stock. Drug planning is usually carried out for 18 months, and the procurement time until the drug arrives at Tegal City Pharmacy Installation is approximately 6 months. The receiving committee carries out the process of receiving and inspecting goods that come, whose duty is to match the name and quantity of drugs, batch number, expiration time, manufacturer and distribution permit number.

Accuracy of Distribution Amount to Puskesmas

The percentage in calculating the accuracy indicator of drug distribution in Tegal City Pharmacy Installation in 2021 is 100%; this follows the standard of the Indonesian Ministry of Health, which is 100% (Table III). A total of eight Puskesmas in the working area of Tegal City are all served according to request, in contrast to the research conducted by Salmah, which obtained a drug distribution accuracy value of 61.5% at the Jambi City Health Center. This problem occurs because in making requests in each distribution period, the Puskesmas drug manager does not take into account the optimum stock, meaning that the drug manager does not take into account the waiting time and drug vacancy time, which can result in the availability of drugs in the Puskesmas, some are excessive, and some are lacking.²¹

Based on the interview results, the Tegal City Pharmaceutical Installation distribution system distributes Puskesmas every year at the beginning of the month. The distribution flow at the Pharmaceutical Installation is that the drug manager from the Puskesmas will make and send LPLPO to the Pharmaceutical Installation. Then, the Pharmaceutical Installation will screen the request. If the request meets the criteria, the requested drug will be prepared and distributed to the Puskesmas. As for COVID-19, drugs are distributed to health services in need, such as hospitals and health centres, and for self-isolation treatment.

Percentage of Drugs Experiencing Empty Stock

The purpose of this indicator is to assess the level of drugs that experience empty stocks. The calculation of the percentage indicator of drugs experiencing empty stock in Tegal City Pharmacy Installation in 2021 with a value of 0%. Therefore, it can be concluded that the percentage indicator of drug vacancies has met the standards according to the Indonesian Ministry of Health of 0% (table III), which means that there are no drug stocks that experience vacancies. Based on the results of an interview with the person in charge of Tegal City Pharmacy Installation, it was determined that this is because City Pharmacy Installation always compiles and analyzes the pharmaceutical needs of Puskesmas in its work area; adjusts to the available budget and takes into account the time of drug vacancies, buffer stock, and avoids excess stock. This is in line with the research of Rintanantasari, which results in drugs experiencing an empty stock of 0% at the Puskesmas Tulungagung Regency and Kupang City, which means it follows the standard. All drug needs at the Puskesmas have been met according to the amount and type of drugs required.²² Although there are drug items that have various dosages, the Puskesmas still provides the medicine items so that drug vacancies can be avoided.

Percentage of Drugs Experiencing Dead Stock

A high percentage of drugs experiencing dead stock indicates that drug turnover is not good and causes inventory to accumulate in warehouses. Based on data on the list of dead drugs in Tegal City Pharmacy Installation in 2021, the calculation of the percentage indicator of drugs experiencing dead stock in Tegal City Pharmacy Installation in 2021 gets a result of 0% (Table III). It can be concluded that the percentage indicator of drugs experiencing empty stock has met the standards used. This is different from Khairani research, which stated that dead stock in two health centres in the Magelang region had values of 40% and 20%. This was due to factors such as changes in prescribing patterns, expiration dates that were too short, and not following requests with drug receipts from UPTD Pharmaceutical Installations.²³

Percentage of Drugs Overstocked

The purpose of this indicator is to assess the level of drugs that are experiencing excess stock. Based on data on the list of empty drugs in Tegal City Pharmacy Installation in 2021, the percentage of drugs overstocked in Tegal City Pharmacy Installation in 2021 is 0% (Table III). This figure complies with the Indonesian Ministry of

Health standards. This study is different from the Rintanantasari study, which found that the drug experienced excess stock at the Tulungagung and Kupang Health Centers by 38.23% and 39.56%, respectively; this was due to planning that exceeded use, changes in disease patterns from the previous year.²²

Percentage of Damaged or Expired Drugs

The purpose of calculating the percentage of damaged and expired drugs is to determine the amount of City Pharmacy Installation losses due to too many damaged and expired drugs. Defective and expired drugs are calculated using a list of defective and expired drugs in one year that reflects the distribution system and planning system inaccuracies and deficiencies, as well as regular observation of the quality of drug storage. Based on the data collected in Tegal City Pharmacy Installation, the percentage value in the calculation of percentage indicators and the value of expired drugs in Tegal City Pharmacy Installation gives a value of 0%. These results follow the standards provided by the Indonesian Ministry of Health, namely 0% (Table III); this shows the appropriateness of planning and observation in storing and distributing appropriate drugs to obtain ideal results; this is in line with the research of Rintanantasari, which got 0% results of expired and damaged drugs in the Tulungagung and Kupang health centres.²² The results differ from the Cholilah study; there are still expired drugs at the Tegal City health centre due to the close expiration time received by the Puskesmas.²⁴

Use

Drug Items Per Prescription

The drug item per prescription indicator provides an overview of the number of drug items prescribed on each prescription sheet. This data can also illustrate the rationality of drug use, especially the occurrence of polypharmacy prescribing. Polypharmacy is the excessive use of drugs in one prescription that does not follow the diagnosis and health condition of patients in health services, in this case, Puskesmas. Based on data collected at Tegal City Pharmacy Installation, the calculation results show that the average use of medicinal items per prescription in the Pharmacy Installation working area health centre in Tegal City is 3.5 drug items. Based on the standards set by WHO, the estimated value of the average number of drug items per prescription sheet is 1.8-2.2 drug items (Table IV). This value is a standard used to minimize the occurrence of polypharmacy. One of the causes of polypharmacy is the condition of patients who have chronic diseases or complications from a disease, so doctors prescribe more than one drug to treat this problem. Polypharmacy can result in an increased risk of drug side effects or ADR (Adverse Drug Reaction), drug interactions, drug waste, and improved patient medical costs. Based on the interviews conducted with the Head of the Tegal City Pharmacy Installation, the average prescription value of 3.5 was also due to the average patient in the Tegal City community health centre suffering from more than one disease.

Research conducted by Dewi at the Kuta District Health Center in 2017 showed that the average number of medicinal items per prescription sheet was 2.9.²⁵ Furthermore, research conducted by Ihsan in all Kendari City health centres in 2016 showed that the average number of medicinal items per prescription sheet was 3.23.²⁶ The results of these two studies show that the average value of drug items per prescription sheet exceeds the estimated value from WHO. The reason for this is also because the patients who seek treatment are mostly older adults who suffer from more than one disease.

Percentage of Antibiotic Use in Non-Specific Diarrhea Patients

The percentage of antibiotic use in non-specific diarrhoea patients in the Tegal City Pharmacy Installation working area health centres is used to monitor the use of antibiotics. Such usage in these cases is categorized as irrational drug use, which can cause serious events like resistance to the use of antibiotics. The calculation result of the percentage of antibiotic use in non-specific diarrhoea patients in the pharmacy installation working area health centre in Tegal City was 30.7%; not meeting WHO standards, namely <8% (Table IV). Based on information from the results of interviews that have been conducted, antibiotics are generally not needed for non-specific diarrhoea because most of the causes of non-specific diarrhoea are foods that stimulate the digestive tract or foods that are contaminated with toxins that trigger digestive disorders, which do not require antibiotics. However, there are a small number of cases (10–20%) where non-specific diarrhoea is caused by food contaminated by pathogenic bacteria such as *V. cholera*, *Shigella*, enterotoxigenic *E. coli*, *Salmonella* and *Campylobacter* due to unhygienic processing. Patients will experience symptoms in the form of pain and even cramps in the stomach. In cases like this, antibiotics are given.

The results obtained at Tegal City Pharmacy Installation differed from those of Sari, where the use of antibiotics in non-specific diarrhoea patients at community health centres in the Pasuruan Regency area obtained

Table III. Distribution Indicators

Indicators	Results	Standard
Drug Availability	13.92 Month	12-18 Month
Accuracy of Distribution Amount to Puskesmas	100%	100%
Percentage of Drugs Experiencing Empty Stock	0%	0%
Percentage of Drugs Experiencing Dead Stock	0%	0%
Percentage of Drugs Overstocked	0%	0%
Percentage of Damaged or Expired Drugs	0%	0%

Table IV. Use Indicators

Indicators	Results	Standard
Drug Items Per Prescription	3.5 items	1-2.2 item
Percentage of Antibiotic Use in Non-Specific Diarrhea	30.70%	<8%
Percentage of Non-Pneumonia ARI Antibiotic Use	34.2%	<20%
Percentage of Myalgia Injection Use	0%	<1%

a value of 7.59%.²⁷ This result is very good because it meets the existing standards, namely <8%.¹³ The use of antibiotics in cases of non-specific diarrhoea should not be necessary because most of them are caused by viral infections, food and/or lactose intolerance. The primary therapy is the provision of sufficient rehydration fluids and electrolyte supplements, as well as the administration of absorbents to reduce the frequency of defecation. Antibiotics are only given when diarrhoea is accompanied by fever and slimy and bloody stools, and a bacterial culture test has been carried out to determine the cause of the diarrhea.²⁸

Percentage of Non-Pneumonia ARI Antibiotic Use

Acute Respiratory Infections (ARI) are infections caused by viruses or bacteria in the respiratory tract, so not all of them are treated with antibiotics. The calculation result of the percentage of use of non-pneumonia ARI antibiotics in Pharmacy Installation working area health centres in Tegal City was 30.7%. This result is not in accordance with WHO standards, which specify a threshold of <20% (Table IV). Based on the results of interviews conducted, this is because the prescriber is giving medicine that is not actually needed for the disease in question, in this case, giving antibiotics for non-pneumonic ARI, which is generally caused by viruses. Anita et al research obtained results that were more than the specified indicator, namely 63.826%. Anita explained that this was caused by a lack of public knowledge about antibiotics, which was a risk factor for increasing levels of bacterial resistance to antibiotics.²⁹

Percentage of Myalgia Injection Use

Indicators for using injections for myalgia influence the level of rationality for using injection drugs. Therefore, the use of myalgia injections must be monitored and evaluated. The percentage value of injection use in myalgia cases in the Pharmacy Installation working area health centre in Tegal City was 0%, which means that the indicator for rational drug use is in accordance with the standard, namely <1% (Table IV). This result is different from research by Indiarto, which explained that the use of injection treatment for myalgia in Madura, East Java, was 1.42%; this is because the public perception that injection preparations are more effective than oral preparations influences doctors to prescribe medication in injection form.^{30,28}

Management Support

The indicators used to support management are the pharmacy installation organizational structure, the person in charge of the pharmacy installation, the number of human resources, the availability of operational costs, and the availability of administrative facilities (Table V).

Organizational structure

Regency/city regional services may form Regional Service Technical Implementation Units (UPT) to carry out operational technical activities or certain supporting technical activities within an agency. The formation of a regional service UPT is determined by a regent or mayor regulation after written consultation with the Minister of Home Affairs. The organizational structure of the Tegal City Pharmacy Installation has the form of a Health

Table V. Management Support Indicators

Indicators	Results	Standard
Organizational structure	UPTD	UPTD
Person in Charge of Pharmacy Installation	Apothecary	Ners
Number of Human Resources	≥7 Person	7 Person
Operating Costs	Available	Available
Administrative Facilities	Available	Available

Service Technical Implementation Unit (UPTD) (Table V); this is in accordance with the standard targets set by the Indonesian Ministry of Health, where it is hoped that every pharmacy installation will have the form of a UPTD. Based on the results of interviews with the Tegal City Pharmacy Installation, the organizational structure at the Tegal City Pharmacy Installation is in the form of a UPTD, which was previously still part of the Pharmacy Section of the Tegal City Health Service. In contrast to Purwanto research, the Bantul District Pharmacy Installation is a work unit under the Food and Beverage Pharmacy Section.³¹

Person in Charge of Pharmacy Installation

An apothecary must carry out activities in planning and evaluating drug needs. In this case, the person responsible for Tegal City Pharmacy Installation is the apothecary. Based on interviews conducted at the Tegal City Pharmacy Installation, there is an apothecary but not the Head of the Tegal City Pharmacy Installation, and this is different from Boku research, which found that the person in charge of City Pharmacy Installation was an apothecary.⁶ This is due to in Tegal City Pharmacy Installation the appointment of section heads by local government policy.

Number of Human Resources

Human resources run the drug management system. The standard number of human resources set by the Indonesian Ministry of Health is ≥ 7 people. Based on the research results, it was found that the number of human resources at Tegal City Pharmacy Installation was 7 people; this is in accordance with the established standards. In contrast to Ingrid research, the human resources at City Pharmacy Installation Southeast Minahasa only had 5 people consisting of 2 apothecaries and 3 TTKs; this influenced the results of drug planning.³²

Operating costs

Operational costs are needed to carry out the drug management process. The standards set by the Indonesian Ministry of Health for each City Pharmacy Installation are available. The research results obtained from Tegal City Pharmacy Installation were the availability of funds for transportation when distributing medicines to health centres and spending on office stationery. This research is in line with Susanti, who obtained the results that operational funds are needed to carry out the drug management process.³³

Administrative Facilities

The Indonesian Ministry of Health standards regarding administrative facilities that City Pharmacy Installation should have include furniture, data processing (computer/laptop), printer, communication equipment, and information such as an internet network to support the drug management process. From the research results, data was obtained that in Tegal City Pharmacy Installation, there were administrative facilities available to support drug management. This research is in line with Susanti, who states that adequate administrative facilities and infrastructure are needed to achieve good availability in managing medicines and health supplies.³³

CONCLUSION

The drug management cycle at the selection, procurement, distribution and use stages in 2021 carried out at the Tegal City Pharmacy Installation as a whole is not in accordance with standards. Of the 20 indicators studied, 12 indicators are in accordance with standards, and 8 other indicators are not yet in accordance. Factors that influence drug management in the Tegal City Pharmacy Installation include human resources, namely prescribers and supporting management, namely local government policy. It is necessary to evaluate the use of

antibiotics in patients with non-specific diarrhoea so that resistance does not occur because the numbers show values above the standard values.

ACKNOWLEDGEMENT

The author would like to thank the Pharmacy Installation of the Tegal City Health Service, which has granted research permission, as well as all individuals and organizations who have assisted with this research.

STATEMENT OF ETHICS

This research was approved with ethical clearance approval obtained from Dr. Moewardi Surakarta Hospital with number 1,151/IX/HREC/2022 on September 1, 2022. The study was conducted at the Tegal City Pharmaceutical Installation in 2022.

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