Analysis of Drug Management and Improvement Strategies Using the Hanlon Method at the Pharmacy Installation of Dr. Oen Kandang Sapi Hospital, Surakarta, Indonesia

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A B S T R A C T

Medication management is an important factor in ensuring the level of drug availability. The aim of this research is to analyze and provide strategies for improving drug management in the Pharmaceutical Installation of Dr. Oen Kandang Sapi Hospital Surakarta using the Hanlon method. This research uses a descriptive design, with data taken retrospectively and concurrently. Data was obtained from the selection, procurement, distribution, and use stages. In the selection stage, the results obtained were drug suitability with the National Formulary (65.14%) and suitability with the Hospital Formulary (75.07%); Procurement stage: frequency of procurement per year (96 times), frequency of delayed payments from hospitals (0 time). In the distribution stage, the percentage of expired date medicines damaged (0.15%), the accuracy of the data on the number of medicines on the stock card was (95.78%), and the percentage of dead stock (3.61%). Stage of use: number of items per prescription sheet (3.18 sheets), percentage of antibiotic drug prescriptions (8.53%), percentage of injection drug prescriptions (29.86%), the average time to serve prescriptions (non-concocted 8.88 minutes and concocted 17.52 minutes), the percentage of drugs that can be submitted (99.95%), percentage of drugs that are fully labeled (100%). Percentage of prescriptions with generic names (49.26%). The results of analysis using the Hanlon method show that drug management in the Pharmacy Installation of Dr. Oen Kandang Sapi Hospital Surakarta is quite good but needs to be improved continuously.

1. Introduction

Medicine is an important component of health services. Good and correct drug management in hospitals is very important to ensure the availability of safe, effective, and affordable drugs for patients. Optimal drug management can improve the quality of health services and patient safety. The Hospital Pharmacy Installation (IFRS) is the unit responsible for managing medicines in hospitals. IFRS has an important role in ensuring the availability of appropriate medicines, both in terms of type, quantity, time, and place. Drug management in IFRS includes several stages, namely selection, procurement, storage, distribution, and use.[1-3]

Research on analysis and strategies for improving drug management in IFRS is very important to do. Drug management in IFRS still often encounters problems, such as Drug shortages, expired drugs, inaccuracies in drug distribution, and errors in drug administration. Drug management problems can have an impact on: Quality of health services, patient safety, treatment costs. Improving drug management in IFRS can improve the quality of health services, improve patient safety, and reduce medical costs.[4-7]

2. Methods

This research uses a descriptive design with data taken retrospectively and concurrently. Retrospective

data is obtained from IFRS documentation, such as: Hospital Formulary, List of approved drugs, Drug procurement data, Drug distribution data and Drug use data. Concurrent data was obtained through: Interviews with IFRS officers and observations at IFRS. Research data was collected using the following methods: Documentation: Data was obtained from IFRS documentation, such as Hospital Formulary, approved drug lists, drug procurement data, drug distribution data, and drug use data. Interviews: Interviews were conducted with IFRS officers involved in drug management, such as IFRS heads, IFRS staff, and doctors. Observation: Observations are carried out in IFRS to directly observe the drug management process.

Data were analyzed using the Hanlon method to assess drug management performance in four stages: Selection: Analysis of drug suitability with the National Formulary and Hospital Formulary. Procurement: Analysis of the frequency of drug procurement and the frequency of delayed payments from hospitals. Distribution: Analysis of the percentage value of damaged expired date medicines, accuracy of data on the number of medicines on the stock card, and percentage of dead stock. Use Analysis of the number of items per prescription sheet, percentage of prescriptions for antibiotics, percentage of prescriptions for injection drugs, the average time to serve prescriptions (non-concoction and concoction), percentage of drugs that can be handed over, percentage of drugs with complete labels, percentage of prescriptions with generic names. The Hanlon method is a method used to assess the performance of drug management in hospitals. This method consists of five questions: What should be done?; What is actually done?; Why is there a difference?; What can be done to improve it?; Who is responsible for doing it?

3. Results and Discussion

Table 1 shows that drug conformity with the National Formulary is still relatively low (65.14%). This shows that there are still drugs used in hospitals that are not listed in the National Formulary. Drug suitability with the Hospital Formulary was higher (75.07%). This shows that the majority of drugs used in hospitals are in accordance with the Hospital Formulary. Drug selection at IFRS of Dr. Oen Kandang Sapi Hospital Surakarta needs to be optimized to increase drug suitability with the National Formulary and Hospital Formulary.

Table 1. Selection of drug suitability.

Criteria	Results	Percentage
Compliance with the National Formulary	In accordance	65,14%
Compliance with Hospital Formulary	In accordance	75,07%

Table 2 shows that the annual frequency of drug procurement is quite high (96 times). This shows that the IFRS of Dr. Oen Kandang Sapi Hospital Surakarta is quite active in procuring medicines. The frequency of delayed payments from the Hospital is non-existent (0 times). This shows that the hospital is always on time in making drug payments. The procurement of medicines by the IFRS of Dr. Oen Kandang Sapi Hospital Surakarta is quite good.

Table 2. Drug procurement.

Criteria	Results
Annual procurement frequency	96 times
Frequency of delayed payments from the hospital	0 time

Table 3 shows that the percentage of expired date-damaged drug values is very low (0.15%). This shows that the IFRS of Dr. Oen Kandang Sapi Surakarta Hospital has a good drug storage system. The accuracy of the data on the number of drugs on the stock card is quite high (95.78%). This shows that the IFRS of Dr. Oen Kandang Sapi Surakarta Hospital has a good recording system. The percentage of dead stock is quite low (3.61%). This shows that the IFRS of Dr. Oen Kandang Sapi Surakarta Hospital is quite effective in administering drugs. The distribution of drugs at IFRS of Dr. Oen Kandang Sapi Surakarta Hospital is quite good.

Table 3. Drug distribution.

Criteria	Percentage
The percentage of expired drug value that is damaged	0,15%
Accurate data on the number of drugs on the stock card	95,78%
Percentage of dead stock	3,61%

Table 4 shows that the number of items per prescription sheet is classified as moderate (3.18 sheets). The percentage of antibiotics prescribed was low (8.53%). This shows that doctors at IFRS of Dr. Oen Kandang Sapi Hospital Surakarta are quite rational in prescribing antibiotics. The percentage of injection drug prescriptions is quite high (29.86%). This needs to be evaluated further to ensure that the use of injection drugs is in accordance with medical indications. The average time to serve a recipe is quite long (non-concoction: 8.88 minutes and concoction: 17.52 minutes). This can be optimized by improving the prescription service system. The percentage of drugs that can be submitted and the percentage of drugs that are fully labeled are very good (99.95% and 100%). The percentage of prescriptions with generic names is quite high (49.26%). This shows that doctors at IFRS of Dr. Oen Kandang Sapi Hospital Surakarta have been quite active in supporting the generic drug use program. Drug use in IFRS Dr. Oen Kandang Sapi Surakarta is quite good, but there are still several indicators that need to be optimized.

Table 4. Drug use.

Criteria	Results
Number of items per recipe sheet	3.18 sheets
Percentage of antibiotic drug prescriptions	8,53%
Percentage of injection drug prescriptions	29,86%
Average serving time for a recipe	Non-concoction: 8.88 minutes; Concoction: 17.52 minutes
The percentage of drugs that can be submitted	99,95%
Percentage of drugs that are fully labeled	100%
Percentage of prescriptions with generic names	49,26%

Socialization of the National Formulary (Fornas) and Hospital Formulary (Fornas RS) to doctors and other health workers is an important activity to ensure the rational, safe, and effective use of medicines. Fornas and Fornas RS contain a list of medicines that have been selected based on scientific evidence and are efficacious, safe, and affordable. Effective socialization can help doctors and other health

workers understand and apply Fornas and Fornas RS in daily practice. Socialization of Fornas and Fornas RS can be done using various methods. Seminars can be held to provide general information about Fornas and Fornas RS to doctors and other health workers. Workshops can be held to provide practical training on the use of Fornas and Fornas RS in daily practice. Online training modules can be created to provide information and training about Fornas and Fornas RS to doctors and other health workers who cannot attend seminars or workshops. E-books about Fornas and Fornas RS can be created and distributed to doctors and other health workers. Social media can be used to disseminate information about Fornas and Fornas RS to doctors and other health workers.[8-12]

The e-prescribing system is a system that allows doctors to prescribe medicines electronically. Doctors no longer need to write prescriptions by hand, which is time-consuming and prone to errors. The e-prescribing system can help doctors choose the right drug, the right dose, and the right method of administration. An e-prescribing system can help doctors avoid prescription errors, such as writing the wrong names of drugs, dosages, or administration methods. Pharmacies can receive prescriptions electronically and process them immediately, so patient waiting times can be shortened. Doctors and pharmacists can easily access information about medications, including drug interactions, side effects, and contraindications.[13-16]

There are various e-prescribing systems available in the market. Doctors and pharmacists need to choose a system that suits their needs. An e-prescribing system needs to be installed on doctors' and pharmacists' computers. Doctors and pharmacists need to be trained to use e-prescribing systems. The e-prescribing system can be integrated with other health information systems, such as electronic medical record systems and insurance claims systems. The implementation of the e-prescribing system needs to be evaluated to ensure its effectiveness. Evaluation can be done by: Compare the time needed to write a hand prescription with the time needed to write an electronic prescription. Compare the accuracy rate of hand prescriptions with the

accuracy rate of electronic prescriptions. Survey doctors and pharmacists to determine their level of satisfaction with the e-prescribing system. Implementing an e-prescribing system can increase the efficiency and accuracy of prescribing. This system can help doctors and pharmacists to provide better service to patients.[17-20]

Pharmacists play an important role in ensuring the rational, safe, and effective use of medications. They need to have adequate knowledge and skills to provide optimal pharmaceutical services to patients. Continuous training and education for pharmacy staff is very important to improve their knowledge and skills. The aim of increasing training and education for pharmacy officers is to: Increase the knowledge and skills of pharmacy officers about medicines, including pharmacology, side effects, and drug interactions. Improving the ability of pharmacy staff to provide pharmaceutical services to patients, including drug counseling and monitoring drug use. Increase pharmacy officers' awareness of current issues in the pharmaceutical field. Training and education for pharmacy officers can be carried out using various methods, including: Formal training can be carried out in the form of seminars, workshops or courses. Informal training can be carried out in the form of on-the-job training, mentoring, or group discussions. Pharmacy officers can learn independently by reading books, journals, or scientific articles about pharmacy. Pharmacy officers can take part in online training and education via e-learning. Training and education for pharmacy staff need to be evaluated to ensure their effectiveness. Pre-tests and post-tests can be carried out to find out whether the knowledge and skills of pharmacy officers have increased after participating in training and education. Feedback can be obtained from pharmacy staff regarding training and education materials, training and education methods, and the benefits of training and education. Increasing training and education for pharmacy staff is very important to increase their knowledge and skills in providing optimal pharmaceutical services to patients.[21-23]

The drug management information system (SIMO) is a system used to manage drug information throughout the drug supply chain. Effective SIMO can

help increase the efficiency and effectiveness of drug management, thereby increasing the availability of quality and affordable drugs for patients. There are various SIMOs available in the market. Hospitals and pharmacies need to choose a SIMO that suits their needs. SIMO needs to be implemented well so that it can function optimally. SIMO users need to be trained to use SIMO correctly. SIMO can be integrated with other systems, such as electronic medical record systems and financial systems. SIMO needs to be evaluated and monitored regularly to ensure its effectiveness. SIMO can help automate the medication management process, thereby saving time and energy. SIMO can help increase the accuracy of drug data and improve decision-making in drug management. SIMO can help ensure the availability of the right medicine at the right time and in the right place. SIMO can help ensure the quality of drugs in circulation. SIMO can help improve patients' access to the medicines they need. The costs to purchase, implement, and maintain SIMO can be expensive. SIMO users need to have adequate computer skills. Optimizing SIMO may require changes in work culture in hospitals and pharmacies. Drug data stored in SIMO needs to be kept secure. SIMO optimization can provide many benefits for hospitals, pharmacies, and patients. Although there are several challenges that need to be faced, optimizing SIMO is an important step to improve drug management in Indonesia.[24,25]

4. Conclusion

Medication management at the Pharmacy Installation of Dr. Oen Kandang Sapi Hospital Surakarta is quite good but needs continuous improvement through the implementation of the strategies outlined.

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