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Evaluation of Drug Management and Improvement Strategies Using the Hanlon Method in the Pharmacy Installation of Dr. Moewardi General Hospital, Surakarta, Indonesia

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A B S T R A C T

A hospital pharmacy (FRS) is a unit in a hospital that carries out health efforts by providing quality health services. Medication management in FRS is an important management aspect in achieving service quality. Therefore, IFRS must be managed effectively and efficiently. Inefficiency in use can have a negative impact on hospitals both medically and economically. The aim of this study was to evaluate drug management, including selection, procurement, distribution, and use, based on the 2020 National Formulary standards and improvement strategies using the Hanlon method at the pharmacy installation of Dr. Moewardi General Hospital in 2020. This research is a type of descriptive research with retrospective and concurrent data collection. Data was taken from retrospective data in 2020 and data at the time the research was conducted. Research materials include primary data obtained from observation of research data in the form of document selection, procurement, distribution, and use of medicine in the IFRS Dr. Moewardi General Hospital. Secondary data was obtained from interviews with the head of the pharmacy installation at Dr. Moewardi General Hospital Surakarta, the head of planning, and the head of ULP (procurement services unit). The results of the research show that 1) Medication management in the pharmacy installation at Dr. Moewardi General Hospital Surakarta is not yet efficient at this stage of selection. It is known that the availability of existing medicines does not comply with FORNAS standards in 2020. then, in stage procurement, there is 1 out of 5 indicators that meet the standard; in stage distribution, 5 indicators were obtained, or all of them were not standard, and in staged use, it was found that 1 of the 5 indicators met the standard. 2) The improvement strategy uses the Hanlon method in drug management, namely prioritizing problem repairs sequentially, starting from the percentage of conformity with the number of drug items available with FORNAS to the number of drug items per prescription sheet.

1. Introduction

Health efforts are carried out with a maintenance and health improvement approach (promotional), disease prevention (preventive), cure of diseases (curative), and health recovery (rehabilitative), which is implemented in a comprehensive, integrated, and sustainable manner. This concept of unified health efforts is a guideline and guideline for all health facilities in Indonesia, including hospitals. A hospital pharmacy (FRS) is a unit in a hospital that carries out health efforts by providing quality health services. Pharmaceutical services are supporting services because more than 90% of health services in hospitals use pharmaceutical supplies (drugs, chemicals, radiological materials, consumables for medical equipment, medical equipment, and medical gas), and 50% of all hospital income comes from the management of pharmaceutical supplies. The main function of the hospital pharmacy installation is to carry out medication management. Drug management is one aspect of hospital management that is very important in the provision of overall health services

because inefficiency and lack of smooth drug management will have a negative impact on hospitals, both medically, socially, and economically.[1]

Medication management in the pharmacy installation includes stages of selection, procurement, distribution, and use, which are interrelated to each other, so they must be well coordinated so that each can function optimally. The disconnect between each stage will result in the existing drug supply and use system being inefficient. A good management process must be adjusted to the hospital budget and the hospital formulary that has been determined by the organization or what is called the hospital pharmacy and therapy committee. In realizing good management, it is necessary that all activities be carried out in harmony, harmony, and balance. If an error occurs at a stage, the result is inefficiency, which can cause impacts such as waste, unavailability of medicines, non-distributed medicines, damaged medicines, and so on, which can cause losses for the hospital.[2]

There are several problems that exist in the pharmacy installation at Dr. Moewardi General Hospital in 2020 based on interviews with the head of the Pharmacy Installation as well as interviews with staff directly starting at the selection, namely the selection of inappropriate or non-essential types of medicine and the high purchase price. Obstacles at stage procurement include a discrepancy between annual drug planning and purchasing due to fluctuations in usage and the length of time for payment of drugs to partners. At stage distribution, it was found that the warehouse conditions were inadequate, the amount of medicine stock did not match the control card, medicines were damaged or expired, waiting times were long, especially during busy pharmacy hours, lots of prescriptions were issued, especially for outpatients, and patient waiting rooms were inadequate. Then, on stage use, there is irrational use of patent medicines. Based on the results of other research that conducted an evaluation analysis of drug management in the Pharmacy Installation of Dr. Moewardi General Hospital Surakarta in 2016, overall drug management was not yet efficient, only in stages of distribution, which is already running efficiently. Based on existing research it shows that inefficient drug management can cause losses to hospitals. Therefore, researchers want to evaluate drug management and improvement strategies using the Hanlon method in the pharmacy installation of Dr. Moewardi General Hospital.[3]

2. Methods

This research is a type of descriptive research with retrospective and concurrent data collection. Data was taken from retrospective data in 2020 and data at the time the research was conducted. Research materials include primary data obtained from observation of research data in the form of documents on the selection, planning, procurement, and use of drugs at IFRS of Dr. Moewardi General Hospital. Secondary data was obtained from interviews. Retrospective data collection was carried out on stage indicators *selection* suitability of available drugs with FORNAS. Stage Procurement includes the percentage of available capital/funds with the total funds required, percentage of drug procurement fund allocation, frequency of procurement of each drug item, frequency of incomplete SP/Invoice/conformity of request, and percentage of number of drug items used as planned. Stage Distribution includes compatibility between drugs and stock cards, turn over ratio (TOR), percentage and value of expired or damaged drugs, level of drug availability, and dead stock. Stage *use* includes the number of drug items per prescription sheet, the percentage of generic drug prescriptions written, the percentage of prescriptions not served, and the percentage of drugs that are labeled correctly.

The repair method uses the Hanlon method. Based on research conducted at Dr. Moewardi General Hospital Surakarta, all drug management indicators, which include selection, procurement, distribution, and use, got a good score, but there are still some that don't reach the standard score, and there are also some things that are not perfect, both indicators selection, procurement, distribution and use, which

will be explained in the table below. Improving drug management begins with identifying problems and creating solutions related to drug management. Then, scores (weights) are given to criteria A, B, C, and D (PEARL). Weighting using the Hanlon method is carried out to obtain values in the form of numbers or cores, which can show a priority scale that can overcome existing problems so that problem-solving can be done in stages. Next, calculate the value basic priority rating (BPR) and overall priority rating (OPR) with the following formula:

BPR (basic priority rating) = (A + B) C/3

OPR (overall priority rating) = [(A + B) C/3] x D

Note: A = value 0–10 (small-large); B = value 0–10 (not serious–very serious); C = value 0–10 (difficult–easy); D = values 0 (yes) and 1 (no).

3. Results and Discussion

Selection stages

Selection stages are carried out at the beginning of each year to prepare standardization of drugs that will be used in the year concerned based on proposals from all functional medical staff by looking at the standardization of drugs in the previous year, reducing unused drug items and adding new drugs that will be used in the year concerned. Measurements carried out at stage selection are the suitability of the drug items available in Fornas, which can be seen in Table 1.

Table 1. Percentage of drug availability with FORNAS.

Description	Amount of medication
Number of drugs available in IFRS	849
Number of drugs available in IFRS that are included in Fornas	611
Results	**71,97%**

Based on Table 1 shows that in 2020, the availability of medicines on the 2020 FORNAS list was 71.97%, still below the value of medicine availability essential in government hospitals, the highest is 76%. This is because there are limited drugs on the market, so the drugs used are branded generic drugs that have almost the same benefits and costs and are the most effective and safe, for example, syrup. Amoxicillin was replaced with arcamox syrup. According to the Head of the Pharmacy Installation, FORNAS was used as a reference in preparing drug standardization at the beginning of the year as one of the criteria for proposed drugs.[4]

Procurement stage

Procurement stage following drug selection and planning. There are 2 types of plans made at the pharmacy installation at Dr. Moewardi General Hospital, namely annual planning and monthly planning. Annual planning is made just before the new fiscal year for budget preparation needs, based on the amount used in the previous year's budget, then adjusted for price increases and available budget plans and referring to the standardization list of medicines.

Procurement of medicines at the pharmacy installation at Dr. Moewardi General Hospital Surakarta is carried out at the beginning of every month in accordance with the plans that have been made and the available budget. Procurement is carried out by pharmacy staff who are part of the procurement team at Dr. Moewardi General Hospital Surakarta in 2020. Procurement is carried out directly or tenders from suppliers, adjusted to the budget. If during that month, there is more drug use than planned, then a follow-up or planning plan is made quickly or both. All budget sources used for drug procurement come from BLUD, and payments are made by the finance department of Dr. Moewardi General Hospital Surakarta. Measurements carried out at stage procurement are:

Table 2. Percentage of available capital/funds with total funds required.

Description	Budget allocation
Amount of funds required	Rp133.664.364.282
Amount of funds available	Rp224.628.971.348
Results	**100%**

Based on Table 2 shows that in 2020, the available funds will be sufficient for all drug purchasing needs, a percentage of 100%. This shows that the percentage of capital available to the total funds required at Dr. Moewardi General Hospital Surakarta meets standards. However, drug funds are always calculated and evaluated for 6 months with the aim of using the drug budget efficiently.

Table 3. Percentage of drug procurement fund allocation.

Description	Fund
Drug budget	Rp136.704.364.282
Hospital budget	Rp224.628.971.348
Results	**60,85%**

Table 3 shows that the nominal budget provided for drug procurement is Rp136,704,364,282. When compared with the entire hospital budget, the availability coverage in 2020 is 60.85%. This value is in accordance with the standard that the budget for medicines is around 50% of the total hospital budget. The adequacy of the available drug budget due to the Pharmacy Installation has been considered a revenue center for hospitals, so submitting additional budgets is easy to do. Efforts that must be made so that the available funds are sufficient to meet IFRS drug needs are that drug planning must be selective while still referring to the principles of effectiveness, safety, economy, and rationality, and corrections are made using a method that classifies drugs into three groups (vital, essential, non-essential).[5]

Frequency of procurement of each drug item

This research shows that in 2020, the average frequency of procurement of each drug item per year using the EOQ method was 11.26 times a year. The frequency of drug procurement is categorized as low because the frequency of procurement in a year is less than 12 times. This is because there is a saving in order costs, but this is to reduce the accumulation of medicines that have not yet been sold, thereby reducing profits, which then results in the length of time for payments to be fulfilled by the hospital to partners due to the medicines ordered still not being turned over and increasing storage costs.

Table 4. Frequency of incomplete SP/Invoice/request compliance.

Description	Invoices
Number of invoices received	14.442
Incorrect invoice amount	31
Results	**0,21%**

This research shows that the average percentage of invoice errors in 2020 was 0.21% of all invoices received. According to other research, the average percentage of invoice errors in 2017-2019 was 1.93%, 1.68%, and 0.49%. This small percentage is because the counterparty already understands the

administrative requirements and procedures that must be completed by the counterparty. The frequency of invoice errors that occur in the Pharmacy Installation at Dr. Moewardi General Hospital Surakarta is 0.21%, which is relatively insignificant to the procurement process. This is because the goods receiving officer is quite thorough and disciplined in fulfilling the completeness of the goods delivery invoice even though he occasionally makes mistakes or human errors. From the results of interviews with goods recipient officers, invoice errors occurred at the pharmacy installation of Dr. Moewardi General Hospital Surakarta from the recipient of the goods made human error.

Table 5. Percentage of the number of drug items used compared to what was planned.

Description	Medicinal items
Number of uses	268.009
Amount according to plan	280.183
Results	**95,65%**

This research shows that the percentage of conformity between planning and reality is 95.65%, so it can be interpreted that drug planning is not yet efficient because it is still below the WHO standard, namely 100%. This is because drug planning is made for budget preparation needs. As medical science and technology advance, different disease patterns overall influence drug planning, so the number and types of drugs increase and plans change. To increase the suitability of planning and use, we must be more selective in drug selection and carry out planning and use in accordance with hospital formulary standards.

Distribution stage

Medicine distribution is a series of activities in the context of issuing and sending quality medicines from medicine warehouses evenly and regularly to fulfill orders or requests from health service units. Distribution is a series of activities in the context of dispensing and delivering medicines, ensuring their validity, correct type, and quantity evenly and regularly to meet the needs of health service units. Distribution of medicines is carried out to ensure sufficient types and quantities of supplies while avoiding stock shortages and pile-ups and maintaining drug inventory levels. In analyzing the efficiency of drug distribution, the following measurements are carried out:

Table 6. Match between drugs and stock cards

Description	Medicinal items
Amount of medication according to records	633
Amount of medication according to physical condition	592
Results	**93,52%**

This research shows that 592 drug items are in accordance with the physical drug and the stock card, meaning that there are still 6.48% of drug items that do not match. The match between warehouse stock and the physical condition of medicines is 100%, whereas the pharmacy installation at Dr. Moewardi General Hospital Surakarta is under WHO regulations, so it can be said that administration in the warehouse has not been carried out optimally.

Based on observations and information from the warehouse staff, the discrepancy between the physical condition of the drugs occurred because the staff did not write it directly on the stock card but only wrote it in the drug receipt and dispensing book, and the warehouse staff were not careful when writing the drug intake and expenditure. To avoid these mistakes, every warehouse officer must check the drug dispensing book with the stock card when drugs come in or out. The officer must immediately write both in the receipt/dispensing book and on the stock card, and the stock card is placed near each item. the medicine.[6]

Turn over ratio (TOR)

The value inventory (TOR) is calculated by dividing the 1-year basic sales price by the value stock recorded at the end of the year. Turn over ratio at the pharmacy installation at Dr. Moewardi General Hospital Surakarta in detail can be seen in Table 7 as follows;

Table 7. Values turn over ratio (TOR)

Description	Fund
Cost of goods sold	133.037.090.014
End-of-year stock taking	17.661.891.890
Results	**7,53**

This research shows the value turn over ratio at the Pharmacy Installation of Dr. Moewardi General Hospital Surakarta is 7.53 times higher. This may be due to the presence of dead stock, where large dead stock affects the value of inventory. According to other studies, the TOR value of 12 is the most relatively inefficient inventory control. The average TOR value shows that the TOR value for the Hospital Pharmacy Installation is good, meaning that economically, the amount of inventory is efficient. This indicator is used to find out how much capital rotates in a year or to measure the level of inventory efficiency. The higher the TOR value, the more efficient the inventory management, and the lower the TOR value, the less efficient the management of medicines or the amount of inventory piling up so that the possibility of making a profit decreases because they have not been sold.

Table 8. Percentage and value of expired and/or damaged medicines

Description	Fund
Expired drug values	176.365.132
Stock taking value	17.661.891.890
Total	**1%**

This research shows that there are drugs that expired and damaged by 1%. This suggests that the management of medication expired and damaged not yet efficient and not in accordance with hospital service standards, namely 0%, there should be no medicine expired and damaged (0%). Based on information from the warehouse officer, even though there were drugs expired and damaged in the Hospital Pharmacy Installation, only a small part of this is due to human resources not working optimally with a recording of drug stock, which was previously not good, planning and procurement of drugs where there was no distribution responsibility clearly, drugs that are not used by the user, socialization, and communication between Pharmacy Installation officers and users is not going well.[5,6]

Drug availability rate

Sufficiency of medicines in the pharmacy warehouse is an indication of continuity of service to support health services in hospitals. By calculating the number of drugs available divided by the average drug use per month will know what level of drug availability there is. Assuming that the number of days in a month is 30 days, the monthly calculation result is multiplied by 30. In this way, data will be obtained for how many days the medicine is available at the pharmacy installation. The results of the observations can be seen in Table 9 as follows;

Table 9. Drug availability rate.

Description	**2020**
Number of drugs studied	221 items
Average rate drug availability	81 days
Results	**2 months**

This research shows that the average level of drug availability in the pharmacy installation of Dr. Moewardi General Hospital Surakarta is 81 days. Thus, the pharmacy installation warehouse still has a supply of medicines for 51 days' needs while waiting for the medicines to arrive. According to pharmacy warehouse officials, the waiting time for medication to arrive at the pharmacy installation ranges from one day to 2 weeks. For drugs whose availability is less than 2 weeks, an order will be made quickly so that the medicine is immediately sent and available at the pharmacy installation.

Table 10. Percentage of dead stock.

Description	**Rupiah**
Deadstock value	567.837.648
Stock taking value	17.661.891.890
Total	**3,22%**

The results of observations at the pharmacy installation at Dr. Moewardi General Hospital Surakarta there is dead stock, namely 3.22% of drugs that have not undergone mutations for 3 months or more. This shows that in 2020, the number of drugs experiencing dead stock at the Pharmacy Installation of Dr. Moewardi General Hospital Surakarta is worth Rp. 567,837,648. The presence of dead stock shows that some of the drugs available in the pharmaceutical warehouse are still not really what the hospital needs, but it also shows supervision in the warehouse as well as communication and information media between installations. The pharmacy with functional medical staff (SMF) is not yet running optimally. According to the pharmacy officer in the warehouse, if there is medicine in stock that has not been used for a long time, the officer will ask the doctor to write a prescription for a patient who needs the same medicine or substitute it.[6]

Use stage

Number of drug items per prescription sheet

Table 11. Number of medicine items for each prescription sheet.

Description	Amount
Medicinal items	2.334.123
Recipe sheet	752.943
Total	**3,1**

This is based on the results of observations at the Pharmacy Installation at Dr. Moewardi General Hospital Surakarta showed that the average number of drug items per prescription sheet was 3.1 drug items. This means that it is still more than the standard issued by WHO, namely for non-mixed medicines, where the number of medicine items per prescription is 2 to 3. Therefore, drug use is still said to be irrational. To avoid irrational use of drugs, the prescribing doctor should collaborate with the pharmacist to decide on the right drug for the patient so as to prevent polypharmacy and minimize the occurrence of side effects from drug use so that the drug given is truly appropriate to the disease he is suffering from.

Percentage of writing generic drug prescriptions

There is a Minister of Health Regulation that requires doctors to write prescriptions for generic drugs, so all doctors at Dr. Moewardi General Hospital had the opportunity to write a prescription for a generic drug. The percentage of writing generic drug prescriptions can be seen in Table 12 as follows;

Table 12. Percentage of writing generic drug prescriptions

Description	Number of recipes
Number of generic drug prescriptions	329.188
Total number of recipes	752.943
Results	43,72%

The results of observations at the pharmacy installation at Dr. Moewardi General Hospital Surakarta showed that the average percentage of generic drug prescriptions written at Dr. Moewardi General Hospital Surakarta in 2020 is 43.72%. Writing generic drug prescriptions as stipulated in Minister of Health Regulation 085/Menkes Per/1/1989 concerning the obligation to write generic drug prescriptions and/or use drugs in government health facilities is a minimum of 80%, whereas according to WHO, the average percentage of generic drug use in Indonesia is 59 %.

The use of generic drugs at Dr. Moewardi General Hospital Surakarta is still below the standards set by the government and below the average usage in Indonesia. The low level of generic drug writing can be said to indicate that the prescribing pattern is irrational, even though the use of generic drugs will help patients a lot in terms of financing. The still low use of generic drugs when compared to government regulations that have been set is due to doctors at Dr. Moewardi General Hospital Surakarta tending to prefer using patented medicines, which are expensive even though generic medicines are available, there is intensive promotion from drug manufacturers, and there is still an opinion by some doctors that patented medicines are more effective than generic medicines, and there have never been any administrative sanctions imposed on these doctors.[6,7]

Percentage of prescriptions not served

The results of observations on the number of prescriptions that were not served at outpatient pharmacy installations in 2020 can be seen in Table 13 as follows;

Table 13. Percentage of prescriptions not served.

Description	Number of recipes
Number of prescriptions issued by outpatient clinics	80.598
Number of prescriptions not served by the pharmacy depot	2.208
Results	**2,74%**

The results of observations at the pharmacy installation at Dr. Moewardi General Hospital Surakarta showed that the percentage of prescriptions that were not served in 2020 was 2.74% of the number of existing prescriptions, namely 80,598. From the data available in the Pharmacy Installation, it can be concluded that the percentage of medicines that cannot be served is not that large even though they still do not meet hospital service standards, namely 0%. If all prescriptions can be served in the pharmacy installation, it can increase hospital income.

The results of observations regarding the number of prescriptions that were not served at the inpatient pharmacy installation in 2020 can be seen in Table 14 as follows;

Table 14. Percentage of prescriptions not served in the inpatient installation.

Description	Number of recipes
Number of prescriptions issued by the inpatient clinic	672.345
Number of prescriptions not served by the pharmacy depot	4.101
Results	0,61%

The results of observations at the Pharmacy Installation at Dr. Moewardi General Hospital Surakarta showed that the percentage of prescriptions that were not served in the Inpatient Pharmacy Installation in 2020 was 0.61% of the number of existing prescriptions, namely 4,101. From the data available in the pharmacy installation, it can be concluded that the percentage of medicines that cannot be served is not that large even though they still do not meet hospital service standards, namely 0%. If all prescriptions can be served in the Pharmacy Installation, it can increase hospital income. Failure to achieve the standard value, namely 0%. According to officers in the field, this is due to 1) the patient's request not to pre-purchase all medicines for reasons of cost, 2) medicine supplies in pharmacies and warehouses are empty, or 3) doctors write prescriptions with medicine compositions outside the applicable medicine standards so that the medicine not available at the hospital.

Overcoming the problem of prescriptions that cannot be served are as follows: 1) changes to the drug distribution system, a welcome or pick-up prescription service (a nurse in each room takes the prescription to the pharmacy or a pharmacy worker takes the prescription to the room), or from individual prescriptions to distribution of medication doses. units in a centralized manner. Based on other research, the implementation of UDD can improve the quality of pharmaceutical services, save costs for

inpatients, reduce the number of drug errors, and increase the safety of drug delivery. 2) With commitment to providing excellent service, many surveys show that satisfied customers will generally tell 2 to 4 people, whereas if they are not satisfied, they will tell 8 to 12 people. 3) improving the quality of service by establishing good relations with all existing medical personnel, for example, doctors and pharmacists, through the pharmacy and therapy committee forum.[7,8]

Table 15. Percentage of drugs labeled correctly.

Description	Number of recipes
Number of recipes	80.598
Number of correctly labeled prescriptions	80.598
Results	**100%**

The results of observations at the Pharmacy Installation at Dr. Moewardi General Hospital Surakarta showed that the percentage of drugs that were correctly labeled in the outpatient hospital pharmacy was 100%. This value meets the standard, namely 100%, meaning that the results are efficient for this indicator. All medicines handed over at the outpatient pharmacy depot are labeled correctly, including complete information on the label, including the date of delivery of the medicine, the patient's name, and instructions for use. Pharmacy depot officers are very careful; before handing over the medicine, they first check the completeness of the information on the new label the medicine is handed over and, at the same time, provide information on how to use the medicine.

The results of observations of drugs that are correctly labeled in the Inpatient Pharmacy Installation in 2020 can be seen in Table 16.

Table 16. Percentage of prescriptions that are labeled correctly.

Description	Number of recipes
Number of recipes	672.345
Number of correctly labeled prescriptions	637.383
Results	**94,80%**

The results of observations at the Pharmacy Installation at Dr. Moewardi General Hospital Surakarta showed that the percentage of drugs that were correctly labeled in inpatient installations was 94.80%. This value is still within the standard, meaning that the results are efficient for this indicator. According to information from officers and observations in the field, this is due to the limited number of officers and the lack of care of officers in writing labels, especially for infusion and injection drugs, which are not included in the instructions for use (doctors sometimes do not write in prescriptions sign or instructions for use) even on infusion drugs no labeling is given at all with the assumption that injectable and infusion drugs will be given to nurses and how to use them is in the patient's status written by the doctor at the time visit, as well as the reasons for busy services, especially when this happens peak hour.

Of course, this cannot be ignored and tolerated, considering the large impact of medication administration errors on patient safety. From observations in the field, researchers also saw the limited quantity and quality of pharmacy staff in the field. Pharmacy staff on duty in inpatient pharmacies serving more than 1000 beds with only 4 pharmacists.

This can certainly be said to be not ideal because from the stages of prescription services, starting from receiving, appreciating, preparing and writing labels, preparing medicine, and handing over medicine to patients, it is possible that inappropriate medicine use may occur.[7,8]

Proposed improvements using the Hanlon method

Based on research conducted at Dr. Moewardi General Hospital Surakarta, all drug management indicators, which include selection, procurement, distribution, and use got a good score, but there are still some that don't reach the standard score, and there are also still some things that are not perfect, both indicators selection, procurement, distribution and use, which will be explained in the table below. Improving drug management begins with identifying problems and creating solutions related to drug management. Then, scores (weights) are given to criteria A, B, C, and D (PEARL).[9,10]

Problem prioritization with the Hanlon method

The assessment carried out by the Hanlon method obtained priority scale results that can be used to overcome problems that do not yet meet the standard values so that the pharmaceutical installation can overcome problems in stages according to the priority results explained in the table below:

Table 17. Weighting using the Hanlon method.

Stage	List of problems	Criteria and maximum weight			BPR	PEARL	OPR	Problem priority
		A= major	B= emergency	C= convenience				
Selection	Percentage of compliance with the number of drug items available with FORNAS	9	9	7	42%	11111	42%	I
Procurement	Frequency of incomplete SP/Invoice/request compliance	4	4	9	24%	11111	24%	VI
	Percentage of the number of drug items held compared to those planned	6	6	7	28%	11111	28%	IV
Distribution	Match between drugs and card stock	6	6	9	36%	11111	36%	III
	Value of turn over ratio (TOR)	5	5	7	23%	11111	23%	VII
	Percentage and value of expired and/or damaged medicines	5	5	8	27%	11111	27%	V
	Drug availability rate in pharmaceutical installations	7	7	8	37%	11111	37%	II
	Dead stock percentage	5	5	8	27%	11111	27%	V
Use	Number of medication items per prescription sheet	5	5	7	23%	11111	23%	VII
	Percentage of writing generic drug prescriptions	9	9	7	42%	11111	42%	I
	Percentage of prescriptions not served	5	5	8	27%	11111	27%	I

Good drug management ensures the availability of needed drugs in sufficient quantities, guarantees quality, and supports quality services in hospitals. Based on observations and interviews conducted by researchers with several sources at locations related to drug management at the RSDM Surakarta Pharmacy Installation, several drug management problems were found to be resolved in order to support sustainable services at the hospital. Therefore, researchers suggest several efforts to improve drug management in hospitals. The framework for efforts to improve drug management is prepared based on identifying problems and solutions that can be carried out by hospital management to overcome existing problems. This can be seen in Table 18 as follows;

Table 18. Problems and solutions for drug management using the Hanlon method.

No	Stage	Indicator	Problem	Solution
1.	Selection	Percentage of compliance with the number of drug items available with FORNAS	Limited availability of drugs on the market	Using branded generic drugs that have the same cost-benefit and are the most effective and safe
2.	Procurement	Frequency of incomplete SP/Invoice/request compliance	It happened due to human error	Create procedures for taking and receiving medicines
		Percentage of the number of drug items held compared to those planned	The pattern of disease prevalence is always changing	Procurement refers to the top 10 disease patterns in the selection and planning process
3.	Distribution	Match between drugs and card stock	Warehouse staff are not careful when writing down the income and expenditure of medicines	Create procedures for taking and receiving medicines
		Value of turn over ratio (TOR)	Many drugs are experiencing dead stock	Control the amount of inventory, provide inventory data, and evaluate medicines that are rarely released
		Percentage of expired or damaged drug value	The stock taking carried out is still not optimal	Perform stop-opname once a month
		Drug availability rate in pharmaceutical installations	The level of drug availability is still low	Evaluate and implement a selective drug planning and procurement system tailored to hospital needs and refer to effective, safe, economical and rational principles
		Dead stock percentage	The order made is still not correct	Evaluate the drug plan and return the drug before it expires 3 months to the vendor
4	Use	Number of medication items per prescription sheet	There is still a large number of drug items per prescription sheet	The PIO's role is in providing drug information so that drug prescribing is more rational, effective and efficient
		Percentage of writing generic drug prescriptions	There is an irrational prescribing pattern	Carry out evaluations and coordinate with users to add prescriptions with generic drugs
		Percentage of prescriptions not served	There is a drug shortage	It is necessary to have a SIM to monitor and guarantee the quality of medicines from stock conditions so as to avoid damage, loss, shortages and excesses.

In Table 18, it can be concluded that the problem is prioritized sequentially as follows: Percentage of conformity with the number of drug items available with FORNAS and percentage of generic drug prescriptions written. Match between drugs and card stock. Percentage of the number of drug items held compared to those planned. Percentage and value of the drug expired and/or damaged, percentage of dead stock, and percentage of prescriptions not served. Frequency of incomplete SP/Invoice/request compliance. Mark turn over ratio (TOR) and the number of drug items per prescription sheet.

4. Conclusion

Medication management at the Pharmacy Installation at Dr. Moewardi General Hospital, Surakarta, is not yet efficient, so it still needs improvement. Stage selection: the availability of medicines on the 2020 FORNAS list is not yet standard. Stage Procurement It was found that the percentage of available capital funds to the total funds required was standard, while the other 4 indicators were not yet standard. Stage Distribution shows that all indicators do not comply with standards and stages of use. It is known that the percentage of drugs that are correctly labeled is in accordance with standards, and the other 4 indicators are not yet standard. The improvement strategy using the Hanlon method is to prioritize repairing problems sequentially, starting from the percentage of compliance with the number of drug items available with FORNAS and the percentage of writing generic drug prescriptions, then the problem of the percentage of available capital/funds with the overall funds required and the level of drug availability in the Pharmacy Installation, then the match between medicines and stock cards, the percentage of the number of medicine items held versus those planned, the percentage and value of medicines that are expired and/or damaged, the percentage of dead stock and the percentage of unserved prescriptions, the frequency of incomplete SP/Invoices/conformity of requests to the value turn over ratio (TOR) and the number of drug items per prescription sheet.

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