

CAUSES OF EMPTINESS DRUGS AND MEDICAL DEVICES CONSUMABLES AT THE REGIONAL PUBLIC HOSPITAL PHARMACEUTICAL WAREHOUSE

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Abstract: One of the main indicators of quality of hospitals Bangil is the incidence of emptiness drugs and medical devices consumables in the pharmaceutical warehouse. In January to August 2016, the incidence rate is still high vacancy. The high incidence of these gaps affects the quality of hospital services. This study aims to determine the factors that cause a high incidence of emptiness drugs and medical devices consumables in the pharmaceutical warehouse Regional public hospital at bangil. Factors that cause the problems can be found using the fishbone analysis method. The research is qualitative research with the informant as follows: head of the pharmacy, head of the outpatient pharmacy, head of the inpatient pharmacy, pharmaceutical warehouse chief, commitment maker official, technical implementation official. The data obtained from depth interviews with the informant. Identification of alternative solutions was conducted using Focus Group Discussion (FGD). Factors that were discovered and became a priority issue is no calculation of the minimum stock and maximum stock at the pharmacy module hospital information system (SIMRS). Alternative solutions isto create a policy on the calculation of minimum stock and maximum stock of drugs and medical devices consumable in hospital pharmacy.

Keywords: Emptiness drugs and medical devices consumables, pharmaceutical warehouse, minimum stock, maximum stock, policies



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The most important aspect of pharmaceutical services as explained by Suciati, et al. (2006), is to optimize the use of drugs, including planning to ensure the availability, safety, and effectiveness of drug use. Based on Law Number 44 of 2009 concerning hospitals, pharmacy requirements must guarantee the availability of pharmaceu-

tical, medical devices, and medical supplies that are quality, useful, safe and affordable.

According to De Weerd, et al. (2015), Emptiness of drugs is defined as the condition of the occurrence of disruption of internal and external situations that result in disruption of drug supplies. Meanwhile, according to the Ministry of Health (2008), Emptiness drugs are the length of Emptiness drugs calculated in days. Minister of Health Regulation Number 58 Year 2014 also confirms that hospitals must have mechanisms to prevent vacancies in stocks of drugs that are normally available in hospi-

tals and get drugs when pharmacy installations are closed.

Success in managing logistics is determined by activities in the logistics management function. Logistics management function according to Aditama (2007), including planning and determining needs, budgeting, procurement, storage, distribution and maintenance, elimination and control.

Bidiawati (2006), also explained that the hospital is one of the service companies that have problems related to inventory. Inventory according to Pamungkas (2014), interpreted as items stored for use in the future period or period. Supplies must be balanced with needs because too little supply can cause Emptiness drugs.

Research conducted by Malinggas (2015), mentioned that one of the factors that influence the supply of drugs in hospitals is controlling the number of stocks of drugs to meet needs. If the stock of drugs is too small, the demand for use is often not fulfilled, so that the patient/consumer is not satisfied, so the opportunity to get a profit can be lost and additional costs are needed to get the drug material quickly to satisfy the patient/consumer. If the stock is too large, the storage costs are too high, the possibility of drugs will become damaged / expired, and there is a risk if the price of ingredients/drugs goes down.

Regional public hospital at Bangil is a C class hospital, owned by the Pasuruan Regency Government, BLUD status. The preliminary study in August 2016 obtained the results of the performance of the Regional public hospital at the very highest quality indicators and achievement of minimum service standards (SPM), there were 21 problems (gaps). From these problems the main priority of the problem was chosen, namely the number of Emptiness drugs and medical devices consumables in the Regional public hospital at the pharmaceutical warehouse from January to August 2016. The annual report of the Regional Public Hospital at Bangil (2015), states that the incidence of Emptiness drugs and medical devices consumables is one of the main quality indicators that are reported annually to the Head of the Pasuruan Regency.

Data on the incidence of Emptiness drugs and medical devices consumables from January to Au-

gust 2016 were in January 79 incidents, February 32 incidents, March 29 incidents, April 428 incidents, May 226 incidents, June 282 events, July 85 incidents and August 138 incidents.

The high incidence of Emptiness drugs and medical devices consumables in the Regional public hospital shows that the performance indicators have not been fulfilled optimally as a hospital owned by the Pasuruan Regency Government and the hospital's vision is not fulfilled, namely a professional and customer-oriented hospital, with quality and patient safety. The unfulfilled quality of service in the pharmaceutical installation will affect the results of the assessment of the Government Institutional Performance Accountability System (SAKIP) for the Regional public hospital at the moment.

According to the research of Mellen and Pudjirahardjo (2013), conducted in Surabaya Haji Hospital due to a lack of stock drugs is the loss borne by the Surabaya Haji Hospital as a result of drug stock out calculated by the loss of opportunity costs during January to April 2012 there were 116 types of drugs that experienced a stockout. The total loss borne by Surabaya Haji Hospital due to drug stockouts was Rp. 10,836,405.00.

This study aims to determine the factors that cause Emptiness drugs and medical devices consumables in Regional pharmaceutical warehouses public hospital at Bangil in 2016. The results are expected to provide recommendations for anticipating the occurrence of Emptiness drugs and medical devices consumables in Regional public hospital at Bangil Pasuruan.

METHOD

The preliminary study was conducted in August and then continued with research from September to October 2016 at the Pharmaceutical warehouse Regional public hospital at the moment. The stages of research are an identification of the root of the problem and identification of alternative solutions. Identification of the root of the problem is done by identifying the process through brainstorming, preparation of the flow process, five why analysis, fishbone analysis, and analysis policies. Flow process preparation uses field observations and in-

interviews, document review and in-depth interviews (Indepth Interview). Fishbone analysis is carried out through interviews and discussions with the ranks of Regional public hospital pharmacy and related management. Identification of alternative solutions is done by brainstorming methods, literature review, formulation and measurement through Focus Group Discussion (FGD).

Observations were made at pharmacy installations related to logistical management processes, in-depth interviews were conducted with informants involved in logistics management of drugs and medical devices used, namely heads of pharmacy installations, heads of outpatient pharmacy service units, heads of inpatient pharmaceutical service units, heads of pharmaceutical warehouses and parties management (officials) related to the procurement of drugs and medical devices used (alkes), That is officials who make commitments and technical executives of activities and procurement officials. Document review includes data on Emptiness drugs, policies, guidelines for pharmacy installation services, organization guidelines for pharmaceutical installations, standard operating procedures for pharmaceutical installations, related regulations namely presidential regulations, minister of health regulations, regent regulations and data on reports and activity books in pharmaceutical installation Regional public hospital at bangil.

Measuring tools used are interview guidelines, observation guidelines, and recording devices. The result of the measurement is the compatibility between input, process, and output with the Ministry of Health standards and theories related to logistics management.

RESULTS

The cause of Emptiness drugs and medical devices consumables in the Regional pharmaceutical warehouse in public hospital was obtained from primary data and secondary data. Primary data were obtained from in-depth interviews with several informants to find and explore information related to Emptiness drugs in the pharmaceutical warehouse Regional public hospital at the moment. Secondary data is obtained from a document review in

pharmacy installations, procurement and planning then compared with related theories and regulations.

The results are grouped according to the concept of inventory management which includes the level of input including human resources (HR), funds (budget), policies, procedures, and pharmaceutical distributors / wholesalers (PBF) as well as at the level of logistics management processes which include inventory planning, inventory procurement, supervision of inventory and inventory control.

Identify Root Problems

The results of independent interviews, review, and search of documents and direct observation with all parties related to the logistics management process found a high incidence of Emptiness drugs and medical devices consumables in pharmaceutical warehouses, then identified the root causes of the problem with the "fishbone analysis" method using a 5 M management perspective and 1 E is man, methods, money, machines materials and environment (Sianipar, Entang, 2001). The results obtained are found in several root problems shown in Figure 1.

In Figure 1, the fishbone diagram contains several root causes that cause the high incidence of Emptiness drugs and used medical devices. The first constituent factor is human (man) the first cause is that the officers are not careful in ordering, so drugs and drugs that should be ordered are not immediately obtained, because the officers forgot to enter empty drug data into the order letter. The second cause is that the officers do not understand using the method of calculating inventory control so that they cannot control the supply of drugs because there has never been an inventory calculation training. The third cause of lack of coordination and communication between officers related to Emptiness drugs, because there are no policies that regulate how coordination and communication if there are Emptiness drugs. The second compilation factor is the first cause the lack of policies governing the control of drugs and medical equipment supplies because the calculation of control is still using the average use of the last three months (history) and stock taking. The second cause is that there are no policies gov-

Causes of Emptiness Drugs and Medical Devices Consumables

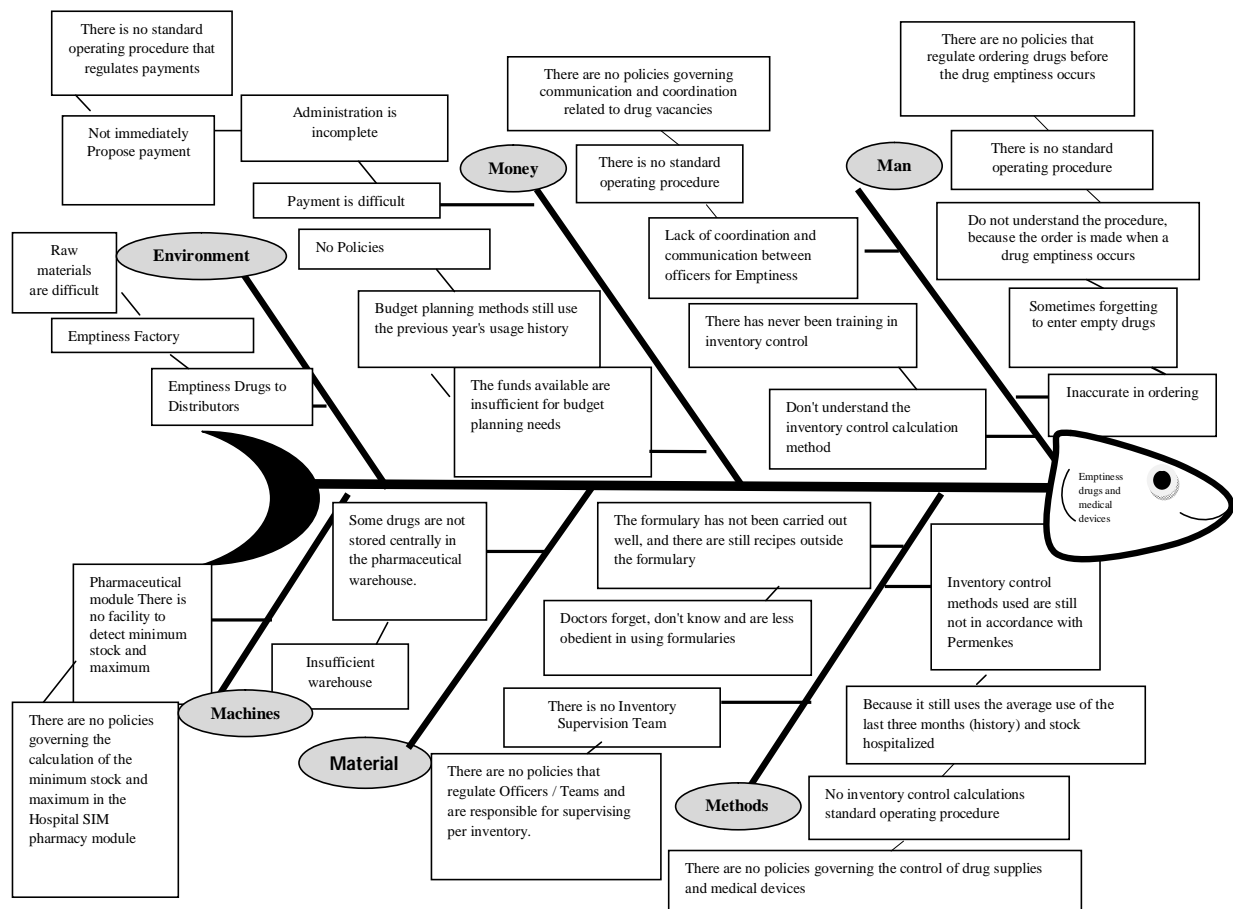


Figure 1 Fishbone emptiness of drugs and drugs

erning inventory control so that control of drugs and medical supplies is lacking. The third reason is that the formulary has not been well implemented there are still recipes outside the formulary, because doctors sometimes forget, or do not memorize all types of drugs in the formulary. The third factor making up money (funds) is the first cause that the available funds are insufficient for budget planning needs because there are no policies governing budget planning using the Pareto model because so far it still uses the previous usage history. The second cause is the payment of ngeclock (the company does not ship the goods because the hospital has not paid) in June and July due to lack of administration, so the shipment is late. Because there is no Standard Operating Procedure that regulates the payment process. The fourth constituent of materials, namely

the first cause is that some drugs are not stored centrally in pharmaceutical warehouses because the warehouse is not enough so that supervision becomes weak, the void is not detected. Factors making up the five machines, namely the first cause is the SIM Hospital pharmaceutical module, there is no facility to detect minimum stock and maximum stock due to the lack of policies that govern the calculation formula for minimum stock and maximum stock. Minimum stock and maximum cannot be determined because there is no calculation formula and has not determined safety stock and lead time. In the sixth environment constituent factor, the cause is the existence of Emptiness drugs in distributors. The vacancy was due to empty factories and difficulties in obtaining raw materials for making drugs and medical devices.

Focus Group Discussion (FGD)

The identification of the fishbone was followed by an FGD to determine priority issues and discuss identification of alternative solutions. The first FGD was conducted on 6 October 2016 attended by heads of pharmaceutical installations, heads of pharmaceutical warehouses, heads of outpatient pharmacy service units, service heads, quality section heads, heads of planning sections, procurement officials and heads of support sections. Determination of priority problems by using methods of effectiveness and efficiency (Symond, 2013). The ranking results of the selected first rank priority issues are the root cause of the problem in the absence of facilities to detect the minimum stock and maximum stock in the Hospital SIM pharmacy module. The second focus group discussion was conducted to determine alternative solutions. Meeting participants agreed to make alternative solutions to all the root problems that were found. Identification of alternative solutions was carried out by brainstorming and literature review with all FGD participants. The alternative solution to selected priority problems. That is using the formula for calculating the minimum stock and maximum stock agreed upon by the participants to be made by the director's policies. Then proceed with the creation of a Standard Operating Procedure. The minimum and maximum formulas for inventory control according to Maimun (2008) are as follows:

Q = Max-Min

- Q = the amount that needs to be ordered for replenishing supplies
- Min = minimum inventory that is the amount of usage during the order or purchase time which is calculated from the multiplication between the order time and the average usage plus the safety stock

Minimum inventory = (K x W) + S

Max = Maximum inventory, which is the maximum amount allowed to be stored in inventory, which is calculated from the amount of usage for 2 x the ordering time that is multiplication between 2 x order time and average usage for one time unit (Undang-Undang Republik Indonesia, 2009.).

Maximum inventory = 2 (K x W)

The results of the FGD are made a plan of action at the root of the main priority problems that will be implemented by the hospital in November and December 2016.

Alternative solutions desired by meeting participants are those related to the ABC budget planning calculation system and inventory control calculations in table 1.

Table 1 Identify alternative solutions to priority inventory control problems

No	Root Level Problem	Cause Factor (the root of the problem)	Alternative Solutions
1	Input level Input level	There are no policies governing the calculation of budget planning using the Pareto model (ABC analysis method)	Made policies that regulate the need for drug budget planning and medical devices used to adjust to the number of funds available. According to the Director General of Pharmaceutical Services of the Ministry of Health in 2010, it was explained to implement drug planning adjustments with the number of available funds, the information obtained was the number of procurement plans, the priority scale of each type of drug and the number of packages for the planned procurement of drugs for the year. Methods for increasing the effectiveness and efficiency of the drug procurement budget:

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Methods for increasing the effectiveness and efficiency of the drug procurement budget:

1) ABC analysis

ABC analysis classifies drugs items based on their funding needs, namely:

Group A:

Type of drug group that the amount of the procurement plan shows that the absorption of funds is around 70% of the total drug funds

Group B:

Type of drug group whose value of procurement plan shows that the absorption of funds is around 20%.

Group C:

Type of drug group that the amount of the procurement plan shows that the absorption of funds is about 10% of the total drug.

Steps for determining Groups A, B and C:

- a. Calculate the number of funds needed for each drug by multiplying quantum drugs with drug prices.
- b. Determine the rank from the biggest to the smallest.
- c. Calculate the percentage of the total funds needed.
- d. Calculate the accumulated percent.
- e. Drugs of group A are included in 70% accumulation
- f. Drugs in group B are included in the accumulation > 70% to 90% (absorbing funds of ± 20%)
- g. Drugs in group C are included in the accumulation > 90% to 100% (absorbing funds of ± 10%)

2	Input level There are no policies governing the calculation of the minimum stock and maximum in the SIM Hospitalpharmacy module.	Created policies that govern the calculation of minimum stock and maximum in the SIMHospitalpharmacy module with the formula: Minimum inventory = (K x W) + S Maximum inventory = 2 (K x W) (Maimun, 2008).
3	Process Level There are no policies governing the control of drug supplies and medical devices	According to Winasari (2016) policies are created to set the method for calculating inventory control. There are three important questions in inventory control: what items should be stored when should order, and how much should be ordered How to control inventory using the following formula: 1. Reorder Point Method (when is the re-order time) Formula: $ROP = (dxL) + \text{Safety Stock}$

ROP = reorder point
d = daily request
L = Lead Time
Safety Stock = $Z \times d \times LZ = 2.05$ (service level) (Winasari,2016)

2. Determine the number of orders
EOQ (Economic Order Quantity)
formula: $Q = 2DS$
Q = Number of orders H
D = Number of goods needed
S = Order cost for each order
H = Cost of storage per year per year.

According to Maimun (2008) the requirements for using the EOQ formula are:

- a. The request is known and constant
- b. Lead Time is the time between order and acceptance, known and constant
- c. Requests received immediately
- d. There is no discount
- e. Costs incurred only in the setup or order costs are known and are constant
- f. There is no out of stock.

DISCUSSION

Factors that influence the cause of Emptiness drugs at the level of inventory management input are factors of human resources (HR) found some root problems, namely the lack of coordination and communication among relevant officials in addressing the existence of Emptiness drugs. During this time the coordination and communication of officers were carried out when drug supplies were used up (empty), this condition has the potential to increase the time of vacancies and problems. The contributing factor to the lack of coordination between pharmaceutical warehouse officers and related procurement and management sections is that there are no operational procedure standards and policies that govern them. Alternative solutions are made policies that regulate information, communication and coordination related to Emptiness drugs and medical devices consumables between related management, pharmaceutical installations and users, for example, if there is still a lot of stock of certain drugs or near empty in the pharmaceutical installation, inform the doctor (user). The procurement section for immediate ordering.

The root of the second problem of HR is the lack of accuracy of officers in ordering drugs. The contributing factor is that if there is known that there is no empty stock immediately enter into the Order Letter (SP) which is forwarded to the procurement department, from the field search the causative factor is that the officer forgets to enter drugs into the order letter immediately, so that empty drugs and drugs data accumulate and late to be included in the list of drugs and medical devices. Besides that, the empty items are detected after a request from a doctor's prescription or from the room. Alternative solutions are routinely checked by officers who are given special responsibility for handling drugs and drugs.

Another factor at the HR level is that the officers do not understand using the inventory control calculation method so as to determine the need for when to reorder so that there will be no vacancies still cannot and there are no calculations because they have never received training (training) about inventory control calculations.

If there is an Emptiness drug and the way to deal with it is the pharmaceutical warehouse of-

ficer with the approval of the Head of the Pharmacy Installation, immediately contact the outside pharmacy that has been in cooperation with the hospital. Then the patient, the patient's family or the hospital took to the Pharmacy. If at the pharmacy the cooperation is empty, then the patient or family of the patient buys drugs at another private pharmacy in the Bangil area. Cooperative pharmacies are pharmacies that are appointed by the Hospital by contracting a cooperation agreement. The pharmacy will make a claim (bill) to the hospital after one month in the following month.

Funding factor is one of the inputs to support drug supply activities in hospitals. Funding factors that can cause Emptiness drugs and hamper drug management activities are the reduction of proposed funds from the Pharmacy Installation that are not in accordance with the calculation of budget planning needs, especially in the use of funds sourced from BLUDs, so that the funds are insufficient for needs. The contributing factor is the budget planning method that still uses the previous year's usage history which cannot determine the effectiveness and efficiency of the budget. Because there are no policies that govern the calculation of budget planning using the Pareto model (ABC analysis method). Another factor of funds is that there has been a lock-in payment because the distributor did not immediately submit an invoice. The contributing factor is that there is no Standard Operating Procedure that regulates the payment mechanism (bill) and the flow. Alternative solutions are made by the Standard Operating Procedure that regulates the payment mechanism and the flow is adjusted to the cooperation agreement between the Hospital and the distributor.

The procedure factor is that the formulary of the Regional public hospital is not optimal yet there are still problems that there are some drugs that are not listed on the formulary written by the doctor, the results of the search are the factors that the doctor forgets, does not know and is not compliant in the use of formularies. Alternative solutions are periodic and continuous socialization to the doctor to remind writing drugs in the formulary by the officer or pharmacist.

The distributor factor influences the Emptiness of drugs, the cause is empty drugs at the distributor level, and empty factories. Alternative solutions are to increase the number of distributors and add to the pharmacy cooperation. At the Regional public hospital, we have a pattern of cooperation with distributors, if the delay in the delivery of drugs, the distributor is subject to the fine agreed upon, and if the distributor is more than fifty days old, the partnership will be terminated.

Factors that influence the cause of drug emptiness at the level of the inventory management process are the need for drug budget planning and consumables based on history and the average usage of the previous year. So that funds are sometimes lacking for the need to procure drugs. The causative factor has not been able to determine the budget priorities needed because there is no Pareto model budget planning method (ABC analysis) recommended by the health ministry in 2008. Research conducted by Suciati, et al. (2006), mentioned that the use of drugs need planning with the ABC method will facilitate the grouping of drugs that are fast moving, moderate and slow moving so as to facilitate type planning and budget grouping can be effectively and efficiently fulfilled.

Other process factors, namely there are no policies that govern the minimum stock and optimum calculation in pharmaceutical module software. In the SIMHospitalpharmacy module, there is a minimum stock and maximum menu, but it cannot be used because the calculation has not been formulated. To determine the minimum stock must be able to determine the safety stock (safety stock) first. According to Maimun (2008), Safety stock is an additional inventory that is held to protect or maintain the possibility of a shortage of inventory and must also determine the lead time (is the time needed between drugs ordered to arrive at the hospital). At the Regional public hospital, at the moment we have not determined the safety stock and lead time so far in determining drugs and medical supplies.

Another factor in the logistics management process is that there are no policies that regulate the control of drug supplies and medical devices. In-

ventory control systems to determine the level of inventory that must be maintained, when orders to add inventory must be made and how many orders must be held. Based on research conducted by Utari (2015), this system determines and guarantees the right supply in the right quantity and time.

The inventory control factor must be fully realized if the inventory control system is running. So far, the supervision and control system in the Regional public hospital has not yet been formed.

CONCLUSIONS

Logistics management system which consists of input factors which include human resources, procedures, policies, funds and distributors as well as process factors including inventory planning, inventory procurement, inventory control and inventory control at the Regional public hospital, is still not in accordance with Ministry of Health and theory standards logistics management. The main contributing factors for Emptiness drugs and medical devices consumables at the Regional public hospital are the lack of guidelines for determining the minimum stock and maximum stock in the SIM Hospital pharmacy module.

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