

**DOI:**

10.22301/IJHMCR.2528-3189.375

Article can be accessed online on:  
<http://www.ijhmcr.com>

-----  
**ORIGINAL ARTICLE**  
-----

INTERNATIONAL JOURNAL  
OF HEALTH MEDICINE AND  
CURRENT RESEARCH

**ANALYSIS OF MANAGEMENT OF DRUG STORAGE, DISTRIBUTION, AND  
CONTROLLING IN PHARMACY INSTALLATION OF REGIONAL GENERAL  
HOSPITAL DR. CHASAN BOESOIRIE TERNATE**

**Fera The<sup>1</sup>, Jimmy Posangi<sup>1</sup>, Fatimawali<sup>1</sup>**

<sup>1</sup> Post Graduate Program of Sam Ratulangi University

---

## ARTICLE INFO

### **Article History:**

Received 06th April, 2017

Received in revised form

07th May, 2017

Accepted 12th June, 2017

Published online 30th June, 2017

---

### **Key words:**

Management, storage, distribution,  
control, drug, Pharmacy Installation.

---

### **\*Correspondence to Author:**

**Fera The**

Post Graduate Program of Sam  
Ratulangi University

### **E-mail:**

fera\_the@yahoo.com

---

## ABSTRACT

Hospital pharmacy services are integral part of hospital health management system, patient-oriented, and to provide high-quality drugs. Drug storage is an activity of storing and maintaining pharmaceutical supply where secure from theft as well as from physical damage that might be affected the quality of drugs. Distribution is a series of activities in order to deliver or dispense drugs from storage to service units or patient while ensuring the quality, stability, type, and quantity of drugs at the appropriate time. Drug storage and distribution are closely related to controlling. The aim of this research is to analyze the storage, distribution, and control of drugs in hospital pharmacy of RSUD Chasan Boesoirie Ternate.

This research uses qualitative research method that aims to obtain in depth information about drug storage management, distribution and control in hospital pharmacy of RSUD Chasan Boesoirie Ternate. Informants were selected based on the principle appropriateness and adequacy. Informants in this research are chief of medical support, head of hospital pharmacy, general staff of hospital pharmacy, head of pharmaceutical warehouse, pharmaceutical distribution staff, and hospital pharmacy staff. The data obtained is processed manually by making transcripts which presented in matrix form and then analyzed by using content analysis method.

Copyright © 2017, **Fera The**. This is an open access article distributed under the creative commons attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Citation: Fera The<sup>1</sup>, Jimmy Posangi<sup>1</sup>, Fatimawali<sup>1</sup>, 2017 "Analysis Of Management Of Drug Storage, Distribution, And Controlling In Pharmacy Installation Of Regional General Hospital Dr. Chasan Boesoirie Ternate", International Journal of Health Medicine and Current Research, 2, (02), 375-278.**

This results showed that the Management of Storage and Distribution of Drugs in Hospital Pharmacy of RSUD Chasan Boesoirie Ternate does not meet the standard of Permenkes 58 year 2014 and Kemenkes 2010, while the Drugs Management Control has been running well enough. It is suggested to make improvements to the facilities and infrastructure in the drugs warehouse, to make depots in RSUD Chasan Boesoirie Ternate so that the drug distribution process can run effectively, and keep the drug control process well to avoid expired and slow moving products.

## INTRODUCTION

Law of health No 36 year 2009 stated that health development was aimed to improve awareness, willing, and ability to live healthy for each person in order the release high degree of social health, as investment for the development of productive human resources socially and economically. Development effort must be based with health concept at the meaning national development must pay attention society health and it was all parties responsibility both government and society.

Hospital was health service institution for society with specific characteristic that influenced by progression of science of health, technology, and society social economy that must be able to improve more quality service and achieved by the society in order to create the health degree at the farthest. Related to the quality increasing and the hospital scope and organization of society right and obligatory in receiving health service, needed to organize hospital with Laws (Anonym,2009b).

Pharmacy service in hospital was imparted part from the hospital health service system that oriented to patients' service, stock of pharmacy, health tools, and medical material supplies that was quality and achieved for all walks of life included clinic pharmacy service. Hospital pharmacy installation was one of unit in hospital that had duty and responsibility at the organization of all aspects related with drug circulated and used in hospital , (Anonym, 2014a).

Drug organization system was hospital activities range that included planning, supplying, storage, and distribution of drug. Every organization step was interrelated range, thereby the drug organization dimension was started from basic supplying planning (Oscar,2016).

The success of hospital drug depended on competency of hospital management. Management function was organizing drug by identifying, planning,

planning the supplying, distribution in order to work effectively and efficiently (Febriawati,2013).

Storage was an activity of organizing the pharmacy store according to rules and regulation determined with information system that always guarantee the availability of pharmacy store according to the needs (Febriawati,2013). Goods in the storage must be kept in order to be quality and sufficient in number and safety of its storage. So, it was needed a good plan and organization in order to prepare right place for each goods or materials storage, from the safety storage or safeguard. (Aditama, 2015)

Distribution was next step after storage. Drug distribution was order of network of infrastructure, personal, procedure, and quality guarantee that was harmonious, integrated, and oriented to sufferers in activity of distribution the drug and its information to the sufferers. Drug distribution included drug delivery that had been *dispensing* by pharmacy installation to the sufferers with safety and accuracy (Febriawati, 2013)

Storage and distribution were tied related with controlling. Controlling was the core of drug logistic management. Controlling was included monitoring and guarding all medical logistic function (Febriawati, 2013).

DR.Chasan Boesoirie hospital was one of reference hospital in North Maluku that located in ternate. This was hospital type B non education that served reference from any regencies such as West Halmahera, North Halmahera, Tidore, South Halmahera, east Halmahera, Central Halmahera, Kepulauan Sula, Pulau Morotai, Pulau Taliabu.

DR.Chasan Boesoirie Hospital had pharmacy installation with 8 pharmacist, S2 pharmacy was 1 personal, pharmacist assistances were 2 personals. Based on the hospital data 2015, percentage of general patients were more than BPJS patients, they were 65 % and 32,2 %. From the profile data, it found that *Bed Occupancy Rate* (BOR) from 65 % in 2014 became 70 % in 2015 with the average of outpatients in 2014 were 592 thousands became 685 thousand in 2015. This caused the increasing of drug demand. The increasing of drug demand supported the hospital to keep drug quality and stability.

Storage and distribution were two functions that had important role in keeping drug quality to the patients. Controlling that included monitoring process also had important role in evaluating drug stock.

Drug storage system in hospital pharmacy installation wasn't appropriate yet, there was accumulation of infuse out of warehouse. Other

infrastructure such as drug storage shelf and pallet were minim. Drug organization wasn't run maximum.

Pharmacy installation distributed drug to the patients by using combination methods that were individual receipt and unit dosage. Drug for inpatients was given per day, while drug for outpatients was given during three (3) days. Patients or patients' family directly took the drug directly to the central pharmacy by bringing doctor receipt. Centralization distribution method caused queue at the doctor visitation time. This was related with service for the patients who needed the drug immediately.

Controlling of storage function created in the form of *stock hospitalizing* that was done every month end. *Stock hospitalizing* was done in warehouse in order to evaluate stock that would be expired, drug damage, drug in-out based on stock card, drug with *fast moving* dan *slow moving* categories. At the distribution, there was often stock out of drug, the drug that was not taken by the patients or patients' family in the Kimia Farma Pharmacy which located in the hospital and out of the hospital.

Based on the problem background, it needed analysis and discussion in order to find betterment effort about management of storage, distribution, and control of drug in Regional General Hospital DR.Chasan Boesoirie Ternate.

## METHODS

This research used qualitative method. it was conducted in pharmacy installation RSUD Dr. Chasan Boesoirie Ternate. Time of research was in December 2016 until April 2017. Sampling was chosen based (*appropriateness*) and (*adequacy*) principles. Based on those principles, the informants were they who directly or indirectly included in storage, distribution, and controlling of drug at the number of 6 personals, they were head of medical support, head of pharmacy installation, pharmacy general staff, head of pharmacy warehouse, distribution staff of pharmacy room, distribution staff of pharmacy RSUD Chasan Boesoirie Ternate. This research used (*content analysis*) method.

## RESULTS

### Drug Storage

Hospital Pharmacy installation (IFRS) was part of hospital that run all pharmacy activities for itself business. The hospital pharmacy installation had responsibility in using safe and effective drug in hospital

as a whole. This responsible included selection, supplying, storage, and preparing the drug for consumption and distribution the drug to the caring unit (Siregar, 2004).

Drug storage was process since the receiving, storage, and distribution the drug to the service unit in hospital. Main purpose of drug storage was to maintain drug quality caused by poor storage and make it easier the searching and monitoring of drugs. In order to monitor and evaluate the result achieved from the drug organization system, it needed an indicator. Testing result could be used to review more exact strategy or target. For achievement of effectiveness of therapy and health purpose, it was needed drug stability that supported the storage and distribution conditions.

Result of in dept interview and observation about storage room, it showed that the hospital didn't have sufficient warehouse yet that was able to save all pharmacy needs. Hospital Chasan Boesoirie had 3 separated warehouses; they were drug warehouse, BHP warehouse, and laboratory warehouse. The drug warehouses were near the pharmacy and out of the hospital. The warehouse size was smaller than that determined by health ministry 2010, 300 m<sup>2</sup> - 600 m<sup>2</sup>. Narrow warehouse caused limited access because there was partition. Warehouse had 1 door in and out, while according to health ministry 2010 the warehouse must have two doors in and out. Narrow warehouse caused other drugs such as infuse placed in front of the warehouse.

Pharmacy warehouse had some pallets and shelves in limited numbers to place certain drugs while other drugs such as infuse placed on the floor. Drug arrange in pallet placed at the wall. The function of pallet was to keep the circulation from the bottom. Warehouse didn't have ventilation and bars window. Humidity in the room was supported with cooler tools AC. Pharmacy warehouse had temperature of 28°C, there was no temperature difference between cool temperature at injection drug 8°-15°C. Inappropriate temperature and air circulation sometimes caused change of drug quality such as color change and deposit at injection drug but it was in small number. For the drugs that needed certain temperature such as vaccine and suppository drug placed cooler case. Because of the condition of cooler case wasn't satisfy, many vaccines placed in special room, especially basic immunization vaccines for baby. The dangerous drugs weren't given explanation. Pharmacy warehouse didn't have firing extinguishing equipment.

Result of in dept interview showed that method of drug storage implemented by the pharmacy division

was based on *First Expired First Out* (FEFO) dan *First In First Out* (FIFO) method. the drug storage didn't ordered based on alphabet yet, because the few of place or shelf. The placement was based on the stock, but because of limited storage, sometime those drugs mixed with oral and injection drugs. Drug storage wasn't based on therapy and special quality classes yet. Narcotic and psychotropic drugs placed in case itself and it was locked. Storage of LASA (*Look Alike Sound Alike*) drug wasn't done yet. SOP of storage in DR. Chasan Boesoerie was available but it wasn't run optimal yet because there were certain parts wasn't done yet.. some of the storage didn't fulfill the standard of Health Minister Regulation 58 year 2014 and Health Ministry 2010 because there was no calculation.

### **Drug Distribution**

Distribution was range of activities in order to distribute/give Pharmacy Stock, Health Equipments, and Medical Material from the storage to the service unit/patient with keeping the quality, stability, types, number, and time exactness. Hospital must determine the distribution system that could guarantee the implementation of monitoring and controlling Pharmacy Stock, Health Equipment, and Medical Material in service unit. (Regulation of Health Minister Republic Indonesia Number 72 Year 2016)

Distribution of pharmacy stock and health equipment was main duty of pharmacy service in hospital. Distribution took hold of important role in distributing the pharmacy stock and health equipment needed to the units in each part of pharmacy hospital included to the patients (Quick,2012).

Drug distribution system in hospital for inpatients was network order of infrastructure, personal, procedure, and quality guarantee that was harmonic, integrated, and patient oriented in distributing the drug stock with its information to the patients. Drug distribution system for inpatients that was implemented in hospital was varied, dependen on hospital's policy, condition and availability of physical facilities, personals, and hospital lay out. Distribution system was planned based on the easy to be reached by the patients by considering efficiency and effectiveness of available source and centralization or decentralization methods.

Drug distribution system in hospital categorized based on the existence of pharmacy satellite/ depot and drug distribution to the inpatients. Based on the existence of pharmacy satellite, drug distribution system decided into two systems, they were: (1). Pharmacy centralization service system and (2) decentralization system.

Centralization was pharmacy stock distribution system that centered at certain place that was pharmacy installation. At centralization, all needs of pharmacy stock at every user unit both for individual need and room need of basic goods were directly supplied from center of that pharmacy service. 2). Separated service system (decentralization).

Decentralization was distribution system of pharmacy stock that had branch near the treatment/service unit. This branch called pharmacy depot/pharmacy satellite. At decentralization, the storage and distribution of room pharmacy distribution wasn't served by pharmacy service center anymore. In this case, pharmacy installation had responsibility toward effectiveness and safety of pharmacy stock in the depot (Anonym, 2014a)

Based on the drug distribution for inpatients, it used four systems, that were drug distribution system of individual receipt, drug distribution system of full stock (*floor stock*), combination distribution system between individual receipt and *floor stock* and drug distribution system of unit dosage/ *unit dose dispensing* (UDD).

An efficient and effective drug distribution system must be able to fulfill the following: 1) Cared drug stock; 2) Quality and condition of drug/drug stock was stable during distribution process; 3) Minimize mall drug and maximize safety at the patients; 4) Minimize damage drug or expired drug; 5) Efficiency of SDM using; 6) Minimize robbing/drug lost; 7) IFRS had all access in all steps of distribution process in order to control the monitoring and implementation of clinical pharmacy service; 8) Existence of professional interaction between pharmacist, doctor, nurse, and patients; 9) Minimize drug wasting and misapplication; 10) Controlled cost; 11) Increasing of using rationale drug (Anonym, 2014a)

Result of in depth interview showed that drug distribution form implemented in pharmacy installation RSUD Chasan Boesoerie Ternate was individual receipt with unit dosage for the inpatients, while for the outpatients, they given with drug for 5 days. Patients or patients' family directly took the drug to the central pharmacy by bringing the receipt given. As the result, there was patient crowded who were in queue from 10.00-12.00 am at the time of doctor's visitation done. Decentralization process that assessed accurately at distribution efficiency wasn't run well yet because the depot building in the room wasn't worked because the propose process wasn't agreed yet. Proposal of depot building wasn't released yet because the cutting of hospital budgeting and too long to be released. The

absence of deposit caused the patients must take drug to central pharmacy and must wait at long time.

Distribution was activity of distributing the pharmacy stock in hospital for individual service in therapy process for inpatients and outpatients and to support medical service. In implementing drug distribution system, hospital depended on policy taken by the managerial, hospital condition, and number of personal owned. Distribution of drug from pharmacist to patients was final part of drug distribution. In pharmacy, this distribution process could be done directly to the patients. However, this couldn't be done toward inpatients because the long distance between hospitalized patients and pharmacist in the pharmacy installation. Else, there was nurse who had responsibility receiving and doing drug consumption for the patients (Anonym, 2014a)

## DISCUSSION

### Controlling and evaluation

At the in depth interview, it found that in order to control drug stock that related with storage and distribution, it was done hospitalized stock periodically each month end. The hospitalized stock was done by checking about drug quantity and quality. It was checked based on the control card. Assessment for expired drug and slow moving through hospitalized stock. Drug that would be expired would be classified based on the date of expiry and would be returned to the distributor and would be changed with the new one. The damage drug caused by the storage would be separated and the expired drug would be follow up. *Slow moving* drug was often occurred because there was lack of coordination from the pharmacy and doctor. Doctor who had got training and returned to hospital often used drug out of stock, so that the pharmacy unit often confirmed about the drug ordered but it wasn't run well. Pharmacy installation often through drug stock out especially *fast moving* drug caused insufficient budget and storage room. The patients were often asked to take the drug in the co-pharmacy around the hospital. The co-pharmacy cooperated with province. Out stock drug was often occurred because formularies at the hospital used national formularies. There was no hospital formal formulary because Therapy Pharmacy Team wasn't worked yet. But as the result, some doctors used drug out of national formularies.

In order to prevent expired stock, it was done some ways: 1) Change the computerization system to be the better one 2) policy about *reward and punishment* as step to increase awareness and commitment in doing the

duty and work 3) made continued evaluation such as evaluation of implementation the fixed procedure of storage and implementation in the field 4) development, training, education in order to improve SDM's ability and skill.

## CONCLUSION

1. Storage in Pharmacy Installation wasn't standard yet as appropriate with Regulation of Health Minister 58 year 2014 and health Minister 2010. Infrastructure and tools of warehouse was small sized, pallet and rack was minimum, drug arranged wasn't based on therapy, alphabet ordered wasn't implemented as a whole yet. Drug ordered wasn't based on LASA procedure. FEFO and FIFO method had run well in Pharmacy Installation RSUD Chasan Boesoerie Ternate.
2. Drug distribution in Pharmacy Installation RSUD Chasan Boesoerie used centralization form and individual receipt system and *Unit Dispensing Dose* system, so that there was patients queue at the time of doctor's visitation because the patients of patients' family took the drug at central pharmacy every day.
3. Controlling drug stock often occurred *stock out* because there was no hospital formal formulary. Hospitalized stock was routinely done so the expired and damage drugs could be minimized in Pharmacy installation RSUD Chasan Boesoerie Ternate.
  1. For the Hospital
    - a. It needed to be ordered about infrastructure of storage especially building of bigger warehouse with easy moving and other equipments such as rack and pallet and drug safety.
    - b. It needed to make room depots so the drug distribution could be worked effectively without caused patients' queue.
    - c. It needed recheck to the cause of drug stock out from planning and supplying functions.
  2. For other researcher  
It suggested to study other function of drug management such as planning, s supplying, deleting and administration especially discussed about formulary of Hospital Dr. Chasan Boesoerie Ternate.

## REFERENCES

1. Aditama, Y.T. Management of Hospital Administration. Indonesia University: Jakarta; 2015.
2. Anonymous, Regulation of Health Minister Number 72. Standard of Pharmacy Service in Jakarta. 2016.
3. Anonimous. Laws No.36 Year 2009 about health, Health Department of Republic Indonesia. Jakarta. 2009a.
4. Anonimous. Regulation of Health Minister Number 58. Standard of Pharmacy Service in Hospital. Jakarta. 2014a.
5. Febriawati,H. Hospital Pharmacy Logistic Management. Publisher Gosyen Publishing. Jakarta. 2013.
6. Imron,M. Hospital Logistic Management. Sagung Seto. Jakarta. 2009.
7. Jahanbani, E. Drug Supply Chain Management and Implementation of Health Reform Plan in Teaching Hospital Pharmacies of Ahvaz Iran. Hospital Practices and Research 2016; 1(4): 141-14.
8. Oscar,L. dan Jauhar,M. Pharmacy Basics Management. Prestasi Pustaka: Jakarta; 2016.
9. Quick, J.D. Inventory Management in Managing Drug Supply. Third Edition, Managing Access to Drugs and Health Technologies.. Management Science of Health. Arlington. 2012.
10. Seto, S dan Nita, Y. Pharmacy Management. Airlangga University Press: Surabaya; 2008.
11. Siregar,C.J.P. Hospoital Pharmacy; Theory and Implementation. Publisher of Drug book EGC: Jakarta;. 2004.

\*\*\*\*\*