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Dynamic Innovation of Public Drug Management in Kupang City, Belu District, and Malaka District East Nusa Tenggara Province, Republic of Indonesia

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ABSTRACT

The issue of availability and affordability of drugs is being and continues to be a concern of the government because in addition to determining the success of health services, also because national drug consumption reaches 40 (forty) percent of overall health expenditure and is one of the highest in the world. Law Number 40 of 2004 concerning the National Social Security System (SJSN) and Law number 36 of 2009 concerning Health requires the government to provide health facilities, health workers, and drug and medical devices. Law number 23 of 2014 concerning the Regional Government grants the authority to organize public and individual health efforts including drug needed by the community. Therefore, the study of drug management innovation becomes so urgent that it will have an impact on the availability and affordability of drugs effectively and efficiently. The purpose of this study is to develop a model of public drug management innovation in districts/cities that can increase efficiency and effectiveness in ensuring both the appropriate type and quantity, and guaranteed efficacy, quality, and safety. The research method used is a qualitative method with an interpretive paradigm. Data were collected by in-depth interviews with informants namely those involved in public medicine policy and management for basic health services in Kupang City, Belu District, and Malaka District. Other data sources were collected by conducting Focus Group Discussion (FGD) with Community Health Center drug management as well as triangulating data sources. Document data in the form of reports, decrees are also collected to complete the information obtained. A sampling of data sources was done by purposive sampling and snowball sampling. The results of the study are public drug management in Kupang City, Belu District, Malaka District for basic health services, and referrals carried out following the drug management guidelines outlined by the Ministry of the Health Republic of Indonesia by making innovations. Innovation is carried out at the planning, procurement, storage, and distribution stages, as well as the use of drugs both with a hybrid model of information technology intervention and without information technology intervention. Types/typologies of innovation consist of process innovation, administration, and are bottom-up and top-down. Public drug management innovation models in the form of information technology/application interventions that can be hybridized with the drug logistics application developed by the Ministry of the Health Republic of Indonesia are needed to create public drug management for efficient and effective basic health services to ensure the availability of drugs with the number, type according to the needs and quality meet the standards where drug relocation can occur between districts/cities. It is recommended that districts/cities implement public drug management guidelines for basic health services and referrals according to guidelines/standards and continue to innovate public drug management innovations in their respective regions and the NTT Provincial Government develops inter-district drug mutation management to improve efficiency and effectiveness of management public medicine.

INTRODUCTION

The implementation of regional autonomy in 2000 based on Law No. 22 of 2009 which was updated with Law No. 32 of 2004 and finally with Law No. 23 of 2014 concerning Regional Government, resulted in some central government roles being transferred to local governments as mandatory affairs and assistance tasks, one of which is in the field of health services. Health services including the provision and or management of budgets for the procurement of essential drugs needed by the public in the public sector are the responsibility of the regional government which was previously the responsibility of the central government. The central government through the Ministry of Health Republic of Indonesia of the Republic of Indonesia remains obliged to provide health program drugs and buffer stocks (MOH, 2006).

Referring to Law Number 36/2009 on Health and Law Number 40/2004 concerning the National Social Security System, the government provides health insurance to the community by providing health facilities, health workers, medical devices, and drugs needed by the community. The availability and affordability of drugs is the government's main concern because national drug consumption in Indonesia currently reaches 40 (forty) percent of overall health expenditure and is one of the highest in the world (Ariati, 2017). Law number 23 of 2014 concerning the Regional Government grants the authority to organize public and individual health efforts including the provision of drugs needed by the community to local governments. Therefore, good management of public drug is an important thing that must be done to have an impact on the availability and affordability of drugs effectively and efficiently.

The Ministry of the Health Republic of Indonesia in the 2015-2019 ministry strategic plan has set targets for activities related to public drug management. In 2018 and 2019 for performance indicators of the percentage of drug and vaccine availability in public health center targeted 90 and 95 percent, the percentage of District / municipal pharmaceutical installations that apply management of drugs and vaccines according to standards 70 and 74 percent, while the percentage of provincial, District / provincial pharmaceutical installations cities that implement logistical (e-logistic) information systems for drugs and medical consumable supplies are 30 and 40 percent. Anggraeni (2017) in a study on the efficiency and effectiveness of the implementation of the one gate drug distribution system at the UPT for the Management of Vaccine, Drug and Health Supplies in East Nusa Tenggara Province

found that the level of availability of drugs in the 2014-2016 period was measured by the availability of indicator drugs namely drugs selected as medicine for maternal health, child health, disease prevention programs, essential basic health services in Kupang City, Belu District and Malaka District as shown in table 1 as follows:

Table No. 1: Percentage of drug availability in Kupang City, Belu District, Malaka District in 2014-2016

Number	District / City	Percentage of Drug Indicator Availability at District Pharmacy Installation of Public Health Office		
		2014	2015	2016
1	Kupang City	100	100	100
2	Belu District	90	90	90
3	Malaka District	70	70	90

Source: Anggraeni, 2017

A survey conducted by the University of Indonesia's Center for Economic Studies and Health Policy during 2015-2016 showed that since the national social security system was implemented in 2014, one of the complaints felt by many participants was the absence of drugs in health facilities when they were treated or not. Several causes of drug emptiness occur, namely: (1). The complexity of the drug distribution pathway up to the patient's hands is very long, (2) There is an imbalance between the planned drug needs and the fact of drug needs in the field (Thabrany, 2016). The absence of drugs in health care facilities also occurred in East Nusa Tenggara Province. POS Kupang newsletter on August 24, 2014, launched a patient being treated namely Gasper Lopis, buying drugs at an outside pharmacy reached hundreds of thousands of rupiah because the Kefamenanu Regional Hospital ran out of drugs because they had not received medicine from the distributor due to not paying off the debt to the supplier. Victory News Daily Saturday 27 August 2016 page 8 contains drug procurement at the Kupang City Health Office which is constrained by shipping so the Head of the Health Service calls on the public health center to anticipate by buying at a pharmacy if it runs out of drug supply.

The skewed view of the public sector in Indonesia has motivated many parties to make improvements or reforms. The aim is to improve public sector performance and increase transparency and accountability. More broadly, this is a manifestation of the desire to go towards good governance / good governance driven by administrative theory that developed in the late 1970s and early 1980s, namely the New Public Management (NPM). New Public

Management is an administration-oriented theory, First: the efficiency drive that prioritizes the value of efficiency in performance measurement, second: downsizing and decentralization which prioritizes simplifying the structure, enriching functions, and delegating authority to smaller units so that they can function quickly and precisely, third: in search of excellence that prioritizes optimal performance by utilizing science and technology, fourth: public service orientation that emphasizes the quality, mission and values to be achieved by public organizations, paying greater attention to the aspirations, needs, and participation of users and citizens, emphasizing societal learning in public service delivery, continuous performance evaluation, community participation and accountability (Ferlie, et al., 1996). The New Public Management Theory from Christopher Hood (1991) has been the basis for the preparation of the bureaucratic reform road map in Indonesia in 2015-2019 which was established based on the Minister of Administrative and Bureaucratic Reform Regulation number 11 of 2015 as the implementation of Presidential Regulation Number 81 of 2010 concerning Grand Design Bureaucratic Reform 2010-2025, where the targets of bureaucratic reform are (1). Clean and accountable bureaucracy, (2). Effective and efficient bureaucracy, (3). The bureaucracy that has quality public services achieved through innovation. The principle of bureaucratic reform, among others, is to provide broad space for Ministries / Institutions and Regional Governments to innovate in governance, exchange of knowledge and best practices to produce better performance.

Facing various problems in the management of public medicine in the district/city as described above, the district/city government through the health department is required to innovate even though traditionally the public sector is relatively free in dealing with innovation compared to the business sector.

Existence of external dynamics and demands for rapid changes, which occur outside of public organizations and changes in society with a better level of literacy, have a better awareness of their rights causing the public sector to become a sector that accommodates and responds quickly to every change that happened. Public sector innovation is the creation/creation and implementation of new processes, products, services, and methods that result in significant improvements in the efficiency, effectiveness, or quality of results. Innovation activities in the public sector can be categorized in 3 ways, namely innovation in determining the direction of policy, innovation in the application of policies and programs, and administrative

innovation to introduce new internal processes and practices to increase productivity / reduce costs (Suwarno, 2002).

Public drug management innovations as part of innovations made by Ministries / Institutions and local governments have been carried out at the central, provincial, and district/city levels, including in Kupang City, Belu District, and Malaka District. However, the issue of the availability of public drug with types according to needs, sufficient quantities, the quality that meets the standards and is available when needed is still unanswered until now. Therefore we need a more in-depth study related to innovation in public drug management, especially in the three districts/cities. The purpose of this study is to analyze more deeply about 1). Public drug management in Kupang City, Belu District, and Malaka District, 2) The role of the organization, human resources, budget and information systems towards public drug management in Kupang City, Belu District, and Malaka District, 3) Innovation in the governance of Kupang City, Belu, and Malaka District in public drug management (existing model), supporting factors and obstacles to the innovation process, 4) Recommended model (recommended model) of innovation in public drug management in the City of Kupang, Belu, and Malaka District that can answer the problem of availability of the public drug in the District / City.

METHODS

This study uses a qualitative approach (qualitative approach) with a philosophical foundation or interpretive paradigm. The choice of this qualitative approach is because the research is carried out through the process of finding, understanding, explaining, and obtaining an overview of social phenomena and public phenomena related to the dynamics of public drug management innovation in districts/cities. The research was carried out by the Health Service, the drug management unit / Pharmacy Installation of the Health Service, 5-7 Public Health center in Kupang City, Belu District, Malaka District, S.K.Lerik Hospital, Mgr Gabriel Manek, SVD Hospital, RSUPP Betun Hospital. Data collection is done by: (1). In-depth interviews with informants directly involved/having authority in the policy and management of public medicine, namely the Head of the Kupang City Health Office, Belu District, Malaka District, the Head of Pharmacy Installation of the Kupang City Health Office, Belu District, Malaka District, Director of S.K. Lerik Hospital, Director of Mgr. Gabriel Manek, SVD Hospital, Director of RSUPP Betun Hospital, Head of Pharmacy Installation at S.K.Lerik Hospital, Mgr. Gabriel Manek SVD Hospital, RSUPP Betun Hospital, head of Public Health

center in each City / District, Commitment Making Officer who is directly involved in public drug management, (2). Focus group discussions (FGDs) with resource persons are 5-7 heads of Public Health center drug management units in each City / District, (3). Documents related to public drug management in the District / City such as reports and decrees. The selection of a sample of information sources is done by the method of purposive sampling and snowball sampling. The data analysis technique was carried out using the Spiral Model which was popularized by Creswell (2007). The first step is a transcript of the interview or verbatim as the text database. In the second stage, a careful reader is carried out throughout the contents of the database while providing important small notes. In the third stage, giving a certain label as an interpretation of all data based on context and category as a theme. In the fourth stage, connecting related themes is made into the headings that are found in the report. The final stage is to represent and visualize the findings in the form of a table then compile the propositions from the research results. Data validity testing is done by triangulation of data sources from informants to other informants and triangulation based on data collection techniques, namely in-depth interviews with focus group discussions (FGDs) and member checks where the results of the transcript and its interpretation are given to informants and informants to check compliance with the intent of information delivered by informants/informants. Meanwhile, the main instrument of this research is the researcher himself because the researchers are involved as interviewers and directors/leaders in focus group discussions.

RESULTS AND DISCUSSION

The drug management cycle consists of four main principles that are interconnected to form a cycle that starts from the planning or selection of drugs used, procurement, storage, and distribution and use of drugs. The drug management cycle is supported by the existence of an organization, finance, information systems, and human resources, where the management of these supporters largely determines the cycle of drug management (Quick et al, 1997). Based on in-depth interviews with informants, focus group discussions with resource persons, the information obtained is grouped into themes according to the drug management cycle that starts from planning, procurement, storage and distribution, use and supporting management such as organizations, human resources, budget and information systems as well as the dynamics of innovation that occur at each stage of public drug management.

A. Public Drug Planning and the Dynamics of Innovation

Planning for drug needs for basic health services in Kupang City, Belu District, Malaka District is based on a bottom-up system, where drug use data are obtained from public drug use units, namely, public health center, followed by calculation of drug needs plans by the drug management unit / Pharmacy Installation of the City Health Office, and coordinating the planning of drug needs from several funding sources. The Minister of Health issued Technical Guidelines for the Management and Procurement of Public Drug and Health Supplies in Minister of Health Regulation number 1121 / Menkes / SK / XII / 2008 which became a reference for health services throughout Indonesia in the implementation of drug planning and procurement (Ministry of Health Republic of Indonesia, 2008).

The public drug planning process in Kupang City, Belu, and Malaka District and the innovations made are illustrated in table 2 and table 3.

Table No. 2: Public Drug Planning for Basic Health Services and Innovations in Kupang City, Belu District, Malaka District

Kupang City	Belu District	Malaka District	Innovation in Drug Planning Phase
Forming an integrated planning team and having a drug planning workshop	Not having an integrated drug planning team.	Not having an integrated drug planning team	
Drug selection based on essential drug list is guided by the national formulary (fornas), accommodating drugs outside the National Forum according to the request of the public health center and for the Kupang Healthy Brigade (BKS) service for emergency services	Drug selection based on the essential drug list guided by the national formulary by accommodating drugs outside the national formulary according to the request of the Public Health Center according to service needs	Drug selection based on the essential drug list is guided by the national formulary by accommodating drugs outside the national formulary according to the request of the Public Health Center according to service needs	1. Entering drugs outside the National Formulary because there is a specific health service program namely the Kupang Healthy Brigade (BKS) for services to the people of Kupang City especially emergency services 2. Accommodating the need for drugs outside the National Formulary concerning the proposal from the public health center as a provider of basic health services for the community in

			Kupang City, Belu and Malaka District
Compilation of drug use based on data The use of drugs and stock is obtained from the format of the contents (excel) given to the public health center and stock data in pharmaceutical installations	Compilation of drug use based on drug use data according to Drug use reports and request sheets, which has been validated every month with the management of public health center drugs and stock data in pharmaceutical installations.	Compilation of drug use based on drug use and stock data based on data requests to the public health center (exel) and the Public health center that does not respond to requests using data available at pharmacy installations, pharmacy plant stock available but not updated	Obtain drug use data from the public health center by developing a drug use form format that makes it easy for public health center staff to submit drug use and stock data for drug planning by Kupang City and Malaka Health Services while Belu District Health Office validates Drug use reports and request sheets data monthly to ensure accurate data on drug use and stock at the public health center
Calculation of drug needs with consumption methods	Calculation of drug needs with consumption methods	Calculation of drug needs with consumption methods	
Projection of drug needs is carried out following the guidelines/formula for the projection of drug needs and by the planning, the officer has been proficient in calculating the projection of drug needs	Projection of drug needs is carried out following the guidelines/formula for the projection of drug needs and by the planning, the officer has been proficient in calculating the projection of drug needs	Projection of drug needs is carried out following the guidelines/formula for the projection of drug needs and by the planning, the officer has been proficient in calculating the projection of drug needs	Using the drug monitoring and evaluation application (e -monev) for drug need plan reporting in Kupang City, Belu District, Malaka District
Adjustments to the procurement plan were made after a definitive budget was obtained and carried out by the head of the pharmaceutical installation, not yet using the ABC-VEN method	Adjustments to the procurement plan were made after a definitive budget was obtained and carried out by the head of the pharmaceutical installation, not yet using the ABC-VEN method	Adjustments to the procurement plan were made after a definitive budget was obtained and carried out by the head of the pharmaceutical installation, not yet using the ABC-VEN method	
A sufficient number of DAK / APBD budget sources are	A sufficient number of DAK / APBD budget sources are	A sufficient number of DAK / APBD budget sources are managed	

managed by the health department and JKN managed by the Public health center	managed by the health department and JKN managed by the Public health center	by the health department and JKN managed by the Public health center	
Involvement of Public health center in making and sending planned drug needs on time, actively involved in planning workshops	Involvement of Public health center in making and sending drug needs plans on time, and data validation routinely	Involvement of Public health centers in making and sending drug needs plans but not all Public health centers involved.	

Source: Primary data processing

Stages of drug planning consist of drug selection, a compilation of drug use, calculation of drug needs, projection of drug requirements, and the stage of adjusting drug procurement plans. Drug selection is based on the national formulary determined by the Minister of Health of the Republic of Indonesia. However, due to the service needs of the City Government of Kupang, Belu, and Malaka District through the pharmacy installation of the health department at the suggestion of the public health center and the existence of a specific program the regional government also included certain drug outside the national formulary in planning for drug needs. The compilation stage of drug use is the overall calculation stage of drug use or use in all public health centers in the previous year. After the compilation stage, the calculation of drug requirements is carried out. The method of calculating the need for drugs used in the Pharmacy Installation of the City of Kupang Health Office, Belu, and Malaka District is a consumption method because the required data is available and the calculation process is easy to do. At the needs projection stage, estimation of drug needs for each type is carried out using a predetermined formula taking into account the availability of drugs both at the public health center and pharmaceutical installations, the time of procurement, and delivery of drugs and safety supplies. The last stage of the drug planning process is adjusting the drug procurement plan to be carried out by the pharmaceutical department's health installation after obtaining the current year's certainly budget. This adjustment is done not yet using ABC-VEN analysis but based on experience so that it is less precise in adjusting the type and amount of drug based on the efficacy/usefulness and price. The results of planning in the form of a Drug Needs Plan year X after being approved by the head of the health department are then reported in stages to the East Nusa Tenggara Provincial Health Office and the Ministry of the Health Republic of Indonesia through the drug need plans e-monev application to further serve as the basis for

estimating national drug needs. The process of planning public drug for basic health services in the public health center is carried out by the pharmacy department of health services involving public health centers. The forms of involvement of public health centers in the planning process differed between Kupang City and Belu and Malaka Districts. The public health center in Kupang City was involved from proposing annual drug needs to discussing and determining the proposals of all public health center through a drug planning workshop at the beginning of the year while the public health center in Belu District was involved in planning by routinely submitting a drug use report and report and request sheet and validating the data as a basis for planning. Not all public health centers in Malaka District are involved in planning by submitting proposed needs. The City Government of Kupang formed an integrated drug planning team that was tasked with ensuring that the planning process was on time following the determining mechanism, while the planning process in Belu and Malaka Districts only involved the pharmaceutical installation of the health department.

The process of planning public medicine for referral health services in S.K.Lerik hospital, Mgr. Gabriel Manek hospital, RSUPP Betun hospital is carried out solely by the hospital pharmacy installation without the involvement of other parts in the organizational structure of the Mgr. Gabriel Manek hospital and RSUPP Betun hospital did planning at the end of year n-2, while S.K.Lerik hospital did planning at the beginning of year n-1. Stages of drug planning for hospitals consist of the stage of drug selection, a compilation of drug use, calculation of drug needs, projection of drug requirements, and adjustments to the drug procurement plan. The selection of drugs refers to the national formulary and hospital formulary. Considering the dynamics of medicine that are always evolving and the need for medical personnel with certain specializations in the current year, the hospital pharmacy installation in selecting the type of drug applies certain mechanisms to accommodate certain drugs outside the national formulary and hospital formulary. The compilation of drug use is done by summarizing the amount of drug use. Mgr. Gabriel Manek, SVD hospital calculated the average drug use for nine months in year n-2, RSUPP Betun hospital calculated the average drug use by calculating based on the most usage of each quarter for three quarters, while S.K. Lerik hospital calculates the average usage of one year before. The calculation of drug needs in the three hospitals is the same, namely using the consumption method with the reason that the data are accurate, easier in the calculation process. The adjustment phase of the drug procurement plan is based on experience, not yet using the ABC-VEN method to produce budget efficiency and accuracy of the efficacy and benefits of the drug. The resulting Drug Requirement Plan/drug need plans are

gradually reported with e-monev application to East Nusa Tenggara Province and the Ministry of the Health Republic of Indonesia to estimate drug needs nationally. An overview of the public drug planning process is as in table 3.

Table No. 3: Public Drug Planning for Referral Health Services and Innovations in S.K.Lerik Hospital, Mgr.Gabriel Manek, SVD Hospital, and RSUPP Betun Hospital

S.K. Lerik Hospital	Mgr. Gabriel Manek SVD Hospital	RSUPP Betun Hospital	Drug Planning Innovation Stage
There is no integrated planning team	There is no integrated planning team	There is no integrated planning team	
Drug selection refers to the national formulary and hospital formulary and for special needs through ethics and therapy commissions	Drug selection refers to the national formulary and hospital formulary (not updated), accommodating doctor requests outside the formulary for service needs	Drug selection refers to the national formulary and hospital formulary and accommodates special needs based on doctor's request	Accommodating additional requests from doctors as drug users in the S.K Lerik hospital, Mgr. Gabriel Manek, SVD hospital and RSUPP Betun hospital for drugs outside the national formulary and hospital formulary for referral services for the community
Compilation of drug use based on a yearly average usage data, drug stock data in the warehouse	Usage compilation based on yearly usage data is predicted based on the most 3-month data from each quarter, warehouse stock data	The usage compilation is based on one-year usage data predicted based on 9-month data, warehouse drug stock data	1. S.K.Lerik hospital uses the Hospital Information System (HIS) in which there is a feature about pharmacy that is Dynamic Pharmacy Inventory (DPI) to get data usage and drug stock for planning in real-time 2. Mgr. Gabriel Manek, SVD, hospital, and RSUPP Betun hospital Planning at the end of year n-2 using data on average drug use 3 months and 9 months in year n-2 to estimate average drug use a year.
Calculation of drug needs with consumption methods	Calculation of drug needs with consumption methods	Calculation of drug needs with consumption methods	
Projection of drug needs is carried out following the guidelines/formula for the projection of drug needs and	Projection of drug needs is carried out following the guidelines/formula for the projection of drug needs and carried out	Projection of drug needs is carried out following the guidelines/formula for the projection of drug needs and	1. S.K. Lerik hospital uses the Hospital Information System (HIS) application for the calculation and projection of drug needs by including the pharmacy

carried out by planning officers who are adept at calculating the projection of drug needs	by planning officers who are adept at calculating the projection of drug needs	carried out by planning officers who are adept at calculating the projection of drug needs	feature, namely Dynamic Pharmacy Inventory (DPP) in 2. S. K. Lerik hospital, Mgr. Gabriel Manek SVD hospital, RSUPP Betun hospital uses the e-Monev application in reporting drug needs plans
Adjustments to the drug procurement plan were carried out by the Head of Pharmaceutical Installation and no ABC, VEN analysis was conducted	Adjustments to the drug procurement plan were carried out by the Head of Pharmaceutical Installation and no ABC, VEN analysis was conducted	Adjustments to the drug procurement plan were carried out by the Head of Pharmaceutical Installation and no ABC, VEN analysis was conducted	
The independent budget is sourced from Regional Public Service Agency and sufficient according to need	The independent budget is sourced from Regional Public Service Agency and sufficient according to need	Independent budget sourced from Regional Public Service Agency and available budget sourced from the Regional Budget and sufficient as needed	

Innovations made at the stage of public drug planning by the Kupang City Health Office, Belu and Malaka Districts, S.K. Lerik Hospital, Mgr. Gabriel Manek Hospital, RSPP Betun Hospital is an effort to improve the process and planning system so that the need for public medicine for basic health services and referrals is available with the type, quantity, and quality as needed. This is following the opinion of Armstrong and Ford in Gana (2011) that one manifestation of innovation in the public sector is in the effort to improve processes and systems.

At the drug selection stage, innovations are carried out by including drugs needed in health care services even though national formularies have been established. The selection of drugs outside the national formulary is bottom-up from drug users in the public health center or hospitals so that they are truly following the real needs of drugs for health services. The selection of drugs listed in the national formulary is top-down where the Ministry of Health Republic of Indonesia of the Republic of Indonesia determines the type of drug users

according to the therapeutic class as a guideline for Provinces and Regencies in determining or choosing the type of drug to be used in service.

The national formulary continues to be adapted following the development of science and technology and legal developments according to the study of disease patterns that occur in society. The National Formulary is a list of selected drugs that are needed and used as a reference for prescribing in the implementation of health services in the implementation of the health insurance program, in case the drugs needed are not listed in the national formulary, other drugs may be used limitedly with the approval of the Head or Director of the local hospital (Ministry of Health Republic of Indonesia, 2019). Thus it can be said that the effort to accommodate drugs outside the national formulary which is bottom-up is an innovation made to adjust drug needs according to the pattern of disease and the development of science and technology.

At the stage of calculating the need for drugs with consumption methods, to obtain stock data or availability of drugs has been introduced drug logistics applications. This application was developed centrally by the Ministry of the Health Republic of Indonesia for use by the district/city, provincial and central pharmaceutical offices of the health department. To make its use widespread, socialization or technical guidance has been carried out to provincial and district/city health service officers. At present both the Kupang City, Belu, and Malaka District Health Offices have not used this innovation well in the management of drug logistics and are in a trial by using a data entry process.

Gopalakrishnan and Damanpour (1997) state that the stages of innovation are grouped into two phases, namely the creation of innovation and the adoption of innovation. The innovation creation phase includes idea creation and problem-solving for the product or process solution. The adoption phase is the acquisition and/or implementation of innovation. Organizations can carry out one phase or be involved in two phases of innovation. This can explain that in terms of innovative drug e-logistic applications, the Kupang City Health Office, Belu District, and Malaka District are involved in the adoption of innovation stages because the innovation creation stage is carried out by the Ministry of the Health Republic of Indonesia. The adoption phase of innovations consisting of the acquisition and implementation of innovations has not yet taken place in this case which results in the application of drug logistics not being used in the recording and reporting of drug logistics in the districts/cities.

Rogers (1983) argues the process of innovation decision making is the process by which a person passes from the first knowledge of innovation by forming an attitude towards innovation, until deciding to reject or accept, implement new ideas and confirm the innovation-decision. Change someone to adopt an innovation occurs in several stages as follows: 1) Stage of awareness (awareness), in this case, starting to realize about something new, begin to be open to the development of the outside world, aware of what already exists and what hasn't, 2) Interest stage, this stage is marked by the existence of activities looking for information about things that he just knows, 3) Evaluation stage (evaluation), after the necessary information is obtained, there is a sense of weighing up for the possibility of doing it yourself, 4) The stage of trying if the information is complete, the interest to imitate is great, and if it turns out the results of the assessment are positive, then the effort to try new things that are already known. 5) The adoption stage starts to practice new things with confidence that will succeed. Referring to Roger's opinion, it can be said that the stages have been passed by the Kupang City Health Office, Belu District, and Malaka District in the process of adopting innovative drug logistics. Based on the results of in-depth interviews with informants it can be said that the stages of awareness, interest, evaluation, and trial have been carried out, but due to various environmental factors, the adoption stage of this innovation has not been successfully done. Rogers realized that from the stages mentioned above there seemed to be weaknesses where the adoption process did not stop after an innovation was accepted or rejected. This condition can change again due to the environmental influence of the adoption recipient. Therefore Rogers (1983) revised his theory of innovation, namely knowledge, persuasion, decision, implementation, and confirmation. This condition is seen in the adoption of drug e-logistic applications. After the technical guidance/outreach, officers know that this application is useful for knowing the stock/stock and distribution of drugs, officers also know how to use e-logistic applications and the principles underlying the use of the application. After knowing, formed an attitude to accept/use this application. The decision to accept the application not only because of having knowledge but also because of the encouragement from the Ministry of the Health Republic of Indonesia to immediately use it / implement it as targeted by the Ministry of the Health Republic of Indonesia. Trials of this innovation have been tried out in Kupang City, Belu District, Malaka District, but due to environmental factors such as limited human resources, limited internet networks, applications that continue to change, it takes a long time to input data causing the adoption of innovations. This is not going as planned.

The adoption of drug e-logistic applications is different from the adoption of drug e-monev applications developed and managed by the Ministry of the Health Republic of Indonesia. This application is intended for all Health Service Facilities, Pharmaceutical Distributor, Pharmaceutical Industry, District / City Health Services, and Provincial Health Offices throughout Indonesia which are used to submit drug need plans reports which then form the basis in the preparation of drug need plans national. Since being developed in 2016, the Kupang City Health Office, Belu District, Malaka District, S.K.Lerik hospital, Mgr Gabriel Manek hospital and RSUPP Betun hospital has both adopted/implemented this innovation in the public drug planning process to report district/city drug need plans and hospital drug need plans to the Ministry of the Health Republic of Indonesia. Environmental factors that influence the adoption of this innovation are the necessity to report drug need plans from the Ministry of the Health Republic of Indonesia, the application has not changed and is easy to operate, does not require a long time for data entry.

According to Halvorsen (2005) the typology of innovation in the public sector is as follows: 1). A new or improved service (new services or improved services), 2). Process innovation (for example, a change in the process of providing services or products, 3). Administrative innovation, for example, the use of new policy instruments as a result of policy changes, 4). System innovation (system innovation), is a new system or a fundamental change from an existing system by establishing a new organization or a new form of cooperation and interaction, 5). Conceptual innovation (conceptual innovation), is a change in outlook, such as integrated water management or mobility leasing, 6). The radical change of rationality (radical change), which is meant is a shift in the general outlook or mental matrix of employees of government agencies. Halvorsen further explained that innovation itself can be categorized as follows: 1). Incremental innovations radical innovations. This innovation is related to the level of authenticity (novelty) of the innovation itself. In the industrial sector, most innovations are incremental improvements, 2). Top-down innovations bottom-up innovations. This is to explain who is leading the process of behavior change. Top means higher management or organization or hierarchy, while bottom refers to workers or government employees and decision-makers at the unit level (mid-level policymakers), 3). Needs-led innovations and efficiency-led innovation. The innovation process initiated has solved the problem to improve service efficiency, products, and procedures.

Innovations made at the drug planning stage by including drugs outside the national formulary for basic health services and outside the national formulary and hospital formularies for referral health services are administrative innovations because they involve a new policy at the local institutional level outside the national policy that is drugs must which is in the national formulary. Innovations made at the compilation stage by creating or developing a format that makes it easy for public health center drug managers to make drug plans and validate the Drug Use Reports and Drug Request Sheets to ensure the accuracy of drug use data, make plans at the end of year n-2 by utilizing flat data the average drug use 9 months and 3 months from 3 quarters of n-2 years, the use of the e-monev application in drug need plans reporting is an innovation process by making breakthroughs in the drug need plans planning and to report process earlier and easier to implement.

B. Procurement of Public Drugs and the Dynamics of Innovation

Regarding drug procurement, the government issued the Minister of Health Regulations number 63 of 2014 concerning Procurement of Drug Based on Electronic Catalogs (e-Catalog). Drug procurement arrangements based on the Electronic Catalog (e-Catalog) aim to ensure transparency/openness, effectiveness, and efficiency of the drug procurement process to meet the needs of health services whose results can be accounted for. All work units in the central and regional health sector and the First Level Health Facility or the Government's Advanced Referral Health Facility carry out the procurement of drugs through E-Purchasing based on the Electronic Catalog (e-Catalog) following statutory provisions. In the case of drug procurement through e-Purchasing based on the Electronic Catalog (e-Catalog) experiencing operational constraints in the application (offline), purchases can be carried out manually (Ministry of Health Republic of Indonesia, Republic of Indonesia, 2014). Guided by Presidential Regulation number 16 of 2018 concerning Procurement of Government Goods and Services, procurement of public drug for primary or first-level health services in the public health center by Kupang City, Belu District, and Malaka District Health Offices is carried out by Commitment Making Officers and Procurement Officers with e mechanism purchasing/e-catalog and for non-e-catalog drugs with the tender mechanism for values above 200 million and values under 200 million with direct appointment mechanism.

The process of procuring public drug for basic health services at the Public health center and referral health services at hospitals and innovations carried out as in tables 4 and 5.

Table No. 4: Procurement of Public Drug in the City of Kupang Health Office, Belu District, Malaka District and Public health center

Procurement Process	Kupang City Health Office	Belu District Health Office	Malaka District Health Office	Innovation Procurement Stage
Type of Procurement	1. e-catalog online 2. Non-e-catalog/offline (Tender or Direct appointment) 3. Request for buffer stock in East Nusa Tenggara Province	1. e-catalog online 2. Non-e-catalog/offline (Tender or Direct appointment) 3. Request for buffer stock in East Nusa Tenggara Province	1. e-catalog/online 2. Non-e-catalog/offline (Tender or Direct appointment) 3. Request for buffer stock in East Nusa Tenggara Province	1. Procurement of public drug through e purchasing or e-catalog 2. Procurement of public drug with JKN capitation funding sources by direct procurement of drugs from drug distributors/ pharmaceutical wholesalers and pharmacies by the public health center in Kupang through orders by pharmacy installers 3. Relocation of drugs that are procured with JKN capitation funds from puskemas with large capitation funds to help public health center with small capitation funds in Kupang City
Actors of Procurement	1. Commitment Officials 2. Procurement officer 3. Public health center drug management through pharmacy pharmacists	1. Commitment Officials 2. Procurement officer	1. Commitment Officials 2. Procurement officer	
Source of funds	1. DAK (APBD) 2. JKN Capitation (Public health center Account)	1. DAK (APBD) 2. JKN Capitation (Public health center Account)	1. DAK (APBD) 2. JKN Capitation (Public health center Account)	
Delivery of goods	Gradually according to the availability of goods	Gradually according to the availability of goods	Gradually according to the availability of goods	
Obstacles	1. Providers are slow in responding to orders for e-catalog drugs and canceling/not fulfilling orders 2. After the reporting deadline/contract input, DAK funds cannot be used for drug procurement	1. Providers are slow in responding to orders for e-catalog drugs and canceling/not fulfilling orders 2. After the reporting deadline/contract input, DAK funds cannot be used for drug procurement	1. Providers are slow in responding to orders for e-catalog drugs and canceling/not fulfilling orders 2. After the reporting deadline/contract input, DAK funds cannot be used for drug procurement	
Request for Public health center Medication	1. Using Drug use reports and request sheets 2. Fulfillment of demand for drugs depends on supply in the pharmaceutical	1. Using Drug use reports and request sheets 2. Compliance with drug demand depends on supply in the pharmaceutical	1. Using Drug use reports and request sheets 2. Compliance with drug demand depends on inventory at the pharmaceutical	

	department of the health department 3. Procurement of drugs with JKN capitation funds is done at any time according to the needs of health centers with orders made by pharmacy pharmacists and payment by health centers so that they meet the needs of the vacancy of drugs at the time of service	department of health 3. Provision of drugs with JKN capitation funds is done once a year after planning needs from the health center and is done after the procurement of e-catalogs and tenders or direct appointment with the DAK budget so that it does not meet service needs when drugs are not available 4. The use of JKN capitation funds has been ongoing for 3 years	service installation 3. Procurement of drugs with JKN capitation funds is done once a year after planning needs from the health center and is done after the procurement of e-catalogs and tenders or direct appointment with the DAK budget so that it does not meet service needs when drugs are not available 4. The use of JKN capitation funds only once in 2019	

Source: Primary data processing

Table No. 5: Procurement of Public Drugs in RSUD S.K. Lerik, RSUD Mgr. Gabriel Manek SVD, RSUPP Betun

Procurement Process	**S.K. Lerik Hospital**	**Mgr. Gabriel Manek, SVD Hospital**	**RSUPP Betun Hospital**	**Innovation Procurement Stage**
Type of Procurement	1. E-Purchasing/e-catalog (online) 2. Direct procurement (offline)	1. E-Purchasing/e-catalog (online) 2.Direct procurement (offline) 3. Partner pharmacy 4. Borrow from health offices and other hospitals	1. E-Purchasing/e-catalog (online) 2. Direct procurement (offline) 3. Partner pharmacy 4. Borrow from health offices and other hospitals	1.Procurement of public drug through e purchasing or e-catalog 2. The combination of online procurement/e-catalogs conducted by procurement officials or Commitment Officer with offline procurement, namely direct procurement from drug distributors conducted by the head of hospital pharmacy installation at S.K.
Actors of Procurement	Commitment Officer and procurement officials, heads of pharmaceutical installations	Commitment Officer and procurement officials, heads of pharmaceutical installations	Commitment Officer and procurement officials, heads of pharmaceutical installations	
Source of funds	Regional Public Service Agency	Regional Public Service Agency	Regional Public Service Agency and APBD	

Obstacles	1. Response providers to procure old e-catalogs 2. Cancellation of e-catalog orders by the provider 3. The e-catalog order was not fulfilled	1. Response providers to procure old e-catalogs 2. Cancellation of e-catalog orders by the provider 3. The e-catalog order was not fulfilled	1. Response providers to procure old e-catalogs 2. Cancellation of e-catalog orders by the provider 3. The e-catalog order was not fulfilled	Lerik hospital, Mgr. Gabriel Manek, SVD hospital, and RSUPP Betun hospital - Procurement of drugs through partner pharmacies, loans from other hospitals, and health services for drugs that are not available at the pharmacy hospital installation at the Mgr. Gabriel Manek, SVD hospital, and RSUPP Betun hospital
Procurement Frequency	Weekly, monthly, quarterly according to the needs of both e-catalog and non-e-catalog	E-catalog once a year and non-e-catalog at any time as needed	E-catalog once a year and non-e-catalog at any time as needed	

Source: Primary data processing

As stated by the Committing Officer informants that the obstacle in the procurement of e-catalog public drugs that affect the availability of drugs is the slow approval of drug requests by providers which results in delays in signing Work agreement with drug distributors /pharmaceutical wholesalers cancellation of orders at the last moment of contract input/reporting following the provisions of the reporting/input of DAK fund contracts and the inability of providers to fulfill orders. This results in the insufficient time available for procurement by tender mechanism or direct appointment so that the drug needs cannot be met according to plan.

After a contract is signed with the distributor, the goods are sent in stages by the pharmaceutical industry or distributor to the pharmaceutical department of the health service according to the availability of drugs in the pharmaceutical industry or distributors.

The description of obstacles in the process of procuring public drug by e purchasing with the e-catalog presented by Comiitement Officer is also as illustrated by Sosialine (2017), which

says that obstacles in the implementation of e-catalogs include: drugs are not in e-catalogs, orders are not responded by the pharmaceutical industry while the provider needs urgent and cannot be postponed, the pharmaceutical industry provider has approved an order but it is only available a few months later or the delivery time is too long, the order refusal by the pharmaceutical industry because the stock is not available, the pharmaceutical industry is subject to administrative sanctions in the form of prostitutes, operational e purchasing.

For the service needs at the Public health center, the medicine that has been held is then given to the public health center based on the public health center request. Requests are made using the request sheet and drug use reporting describing the type of drug and the amount requested and which has been used by the Public health center and the remaining inventory available at the public health center.

Apart from the DAK fund, the source of funds for the procurement of drugs for basic/first-level health services in the public health center is the JKN Capitation. These funds are in the public health center account. Based on focus group discussions with the public health center drug management in Kupang City, Belu District, and Malaka District, it was concluded that the public health center drug administrators were very hopeful that this budget could be used to overcome the frequent drug vacancies at the public health center so that the procurement mechanism had to be simplified so that the drugs could be quickly available to fill in the gaps that occur in service.

Based on the information delivered by the focus group discussion participants, namely the management of public health center drugs in Kupang City, it was stated that in overcoming the vacancy of drugs that occur in service by making a request for drugs to the distributor or buying at the pharmacy at any time needed through a request or Order Letter from pharmacy installation pharmacy health services and paid for by the health center. In this way, the public health center quickly obtains drugs to meet the needs of the service to avoid a vacancy for the service. As an informant from the Head of Pharmacy Installation at the Kupang City Health Office said that in the procurement process with JKN capitation funds, drug relocation can be done from public health center with large JKN capitation funds to public health center with small JKN capitation funds to fulfill drug needs that cannot be provided from official pharmaceutical installations health. This relocation is temporary, if public medicine with DAK funding sources is available it will be returned to the public health center providing drug loans.

The informant said that with the process of procuring public drug with JKN capitation funds like this, it could fill the drug vacuum often experienced by the public health center.

The process of procuring public drug with JKN capitation funds in the Belu and Malaka District Health Offices with the e purchasing/e-catalog mechanism and direct appointment. The process is carried out after all requests/planning from the public health center are received by the health office and the time of the procurement process after the procurement of drugs with DAK funds has been completed. The procurement process is carried out by the Commitment Officer and the Health Procurement Officers and after the drugs arrive they are only distributed to the public health center. As conveyed by the speakers at the focus group discussion (FGD) and in-depth interviews with the head of the pharmaceutical installation that after planning from the public health center is received, checks will be made with the procurement that has been done with DAK funds so that there is no excess or lack of drugs later. Such a procurement mechanism, the type and amount of drugs planned and carried out is complementary to the public drug that is sourced from DAK and cannot fulfill the drug vacuum often experienced by public health center as conveyed by the public drug manager at the public health center at the time of focus group discussions.

Pratiwi, Dwiprahasto, Budiarti (2011) in evaluating the planning and procurement of drugs in the Pharmacy Installation of the Semarang City Health Office found that the mismatch of planning and procurement of drugs was not always affected by limited funds, but because the procurement of drugs which was done once a year could not avoid the vacancy of drugs, there are delays in delivery and the drugs that are not fulfilled by the winner of the auction even though there are sufficient funds available. The description of the procurement process is the same as what happened in the Pharmacy Installation of the City of Kupang, Belu, and Malaka Health Offices that the process of drug procurement with DAK funds is carried out once a year either by e purchasing/e-catalog or tender or direct appointment mechanisms. As the PPK Belu and Malaka informants said that it often happens that drugs that have been ordered according to the contract or SPK cannot be fulfilled or canceled at the last moment of the contract deadline so that there is no avoidance of a drug vacancy but sanctions following statutory provisions have not been applied so there is no impact on improving the procurement process.

About the same condition also occurs in the management of public drugs in the Lhoksemawe City Health Office according to Muchlis (2016) findings, where the method of drug procurement is carried out through e-purchasing using the e-catalog system and in the

procurement, implementation faces several problems such as the type of drug that cannot be fulfilled by partners due to the type of drug that is out of stock or out of stock, the time of procurement and arrival of the drug sometimes still does not follow the agreed timeliness on the contents of the contract agreement.

An overview of the process of procuring public drugs for referral health services carried out at S.K. Lerik Hospital, Mgr. Gabriel Manek, SVD Hospital, and RSUPP Betun Hospital are similar to those conducted at Muntilan Hospital, Karel Sadsuitubun Hospital, Sekayu Hospital. The procurement method used is the same, namely e purchasing through e-catalog and direct procurement to PBF. There is an additional mechanism for the procurement of drugs in Mgr. Gabriel Manek, SVD Hospital, and RSUPP Betun Hospital where the source of the drug also comes from partner pharmacies, loans from other hospitals, and loans or grants from the health department. The tender mechanism is not carried out for drugs outside the e-catalog because consideration of the procurement value below 200 million is also a consideration of the faster procurement process so that the availability of drugs can be maintained following the dynamics of the needs of drug medication services. Frequency of procurement for procurement of e-catalogs at Mgr. Gabriel Manek, SVD hospital, and RSUPP Betun hospital is carried out once a year and in S, K, Lerik hospital done several times as needed. The frequency of direct procurement at S.K. Lerik hospital in a month can be once or several times as needed, and Mgr. Gabriel Manek, SVD hospital, and RSUPP Betun hospital several times a year according to need. The obstacle faced in procurement is related to the procurement of e-catalog where the delivery time of the drug is uncertain, the drug is not served or the order is canceled.

Badarudin (2015) in his research found that the procurement of drugs in the Sekayu Hospital using an online e-purchasing system through the Government Goods and Services Procurement Policy Institute web also with a tender mechanism. Drugs in procurement following the formulary of Sekayu Hospital. Drug procurement is carried out once a month if the use of a lot of drugs is done twice a month. Constraints that often occur in procurement is the arrival of drugs from distributors late so often make purchases to pharmacies outside the hospital.

R., Wirdah Wati, Fudholi, Widodo (2013) in evaluating drug management in Karel Sadsuitubun Regional Hospital in Southeast Maluku District revealed that the average frequency of drug procurement is once a year (low frequency) when compared to the EOQ (Economic method) Order Quantity) is around 2 times a year. When the frequency of

procurement can be increased by the EOQ method it can reduce storage costs and the risk of damage/expiration, even though ordering costs increase but can do a great cost-efficiency.

Mahdiyani, Wiedyaningsih, Endarti (2018) in evaluating drug management in Muntilan Regional Hospital Magelang District found that the procurement and ordering system was carried out by e-procurement / e-purchasing through e-catalog for BPJS drugs and by ordering directly to PBF for general medicine with a frequency of procurement 3-4 times a year.

The innovation has been adopted/implemented by the public drug procurement provider in the Kupang City Health Office, Belu District, and District, S.K.Lerik Hospital, Mgr Gabrile Manek, SVD Hospital, and RSUPP Betun hospital, namely the procurement of public drug through e purchasing or e-catalog according to Presidential Regulation number 16 of 2018 concerning Procurement of Government Goods and Services and Minister of Health Regulation number 63 of 2014 concerning Procurement of Drug Based on Electronic Catalogs (e-catalogs) so drugs can be obtained at competitive prices and with a fast, transparent, accountable process. The existence of regulations that are obligatory / forced to be supported by environmental conditions such as the availability of human resources, applications that have been established, are not complicated in use and do not take up much time in their use, make the adoption of this innovation run well in the procurement of public medicine both at the Kupang City Health Office, Belu District, Malaka District and SK Lerik Hospital, Mgr Gabriel Manek, SVD Hospital., RSUPP Betun Hospital.

Procurement of public drug for basic health services, Kupang City Health Office also innovates in the procurement of public drug with JKN capitation funding sources by direct procurement of drugs from drug distributors/pharmaceutical wholesalers and pharmacies through orders by pharmacy that can be done at any time according to drug needs. This innovation allows the public health center to meet the needs of drugs that are not obtained from the pharmaceutical department of the health department because of a lack of supplies so that drug services to the community continue to run well. This procurement innovation is a breakthrough because it is not through the e purchasing/e-catalog mechanism and direct appointment involving Commitment Officer and Procurement Officers as done by the Belu and Malaka District Health Offices. Through this innovation in the procurement process, public health centers are quick to obtain drugs from distributors/providers of drugs for the needs of drug services at the public health center.

Besides that, the innovation in the process of procuring public drug by the City of Kupang Health Office is also in the form of the relocation of drugs which are procured with JKN capitation funds from public health centers with large capitation funds because there is a large number of participants to help public health center with small capitation funds for the smooth delivery of drug services at the public health center to the community. Kupang City. This innovation is very beneficial for public health centers with a small JKN capitation fund because there is little scope of participants to meet their medication needs that are not available. Substitution of drugs will be carried out by the pharmacy installation to the public health center that gives medicine after the drug is available in the pharmacy installation.

Innovations in the process of procuring public drug for referral health services were carried out by S.K. Lerik Hospital through a combination/hybrid between online procurement/e-catalogs conducted by procurement officials or Commitment Officer with offline procurement, namely direct procurement from drug distributors conducted by the head of the hospital pharmacy installation for drugs that are not listed on e-catalog or for e-catalog drugs which have been ordered but the drugs haven't arrived yet. Thus the drug needs for referral services are still being met. RSUD Mgr. Gabriel Manek and RSUPP Betun also innovated the procurement of public drug by combining procurement through e purchasing/e-catalog and direct procurement by the head of the hospital pharmacy installation with an order to the Pharmaceutical Wholesaler. It also innovates drug procurement through the presence of partner pharmacies for drug services that are not available in hospital pharmacy installations and borrowing from other hospitals and health services. These innovations are carried out so that drugs are always available in hospitals to meet the needs of referral services to patients.

Innovation is related to new ideas that are useful and the nature of renewal has value, but it does not mean anything if it is not followed by the presence and value of its usefulness (Mulgan and Albury, 2003). Innovations in the procurement of public drug made by the City of Kupang Health Office for basic health services and S.K. Lerik Hospital, Mgr. Gabriel Manek, SVD Hospital, RSUPP Betun Hospital for referral health services is in line with the opinion of Mulgan and Albury that the innovations made are new ideas born from knowledge and experience in drug procurement and provide benefits in the form of availability of drugs with appropriate types, quantities, and quality for health services.

Robbins (1994) focuses more on innovation: 1) new ideas which are thought to observe phenomena that occur, can be in the form of the discovery of ideas, systems, ideas to crystallize

ideas, 2) products or services as a result of new ideas that are follow-up various studies, research, and experimental activities give birth to concrete concepts of services and products that are ready to be implemented and developed, 3) improvement efforts which are systematic efforts to improve and continuously improve the fruits of these innovations can be felt. The innovations made in the procurement of public drug for basic health services and referrals are also in line with Robinson's opinion that these innovations are systematic efforts to improve and improve continuously and their fruits provide a perceived benefit in the form of good quality drug services to the public both at the public health center and in the hospital.

One of the innovations adopted in the procurement of public drug for basic health services and referrals in Kupang City, Belu District, and Malaka District is an electronic procurement system through the e-purchasing / e-catalog of drugs. The adoption of innovations developed by the Government Goods and Services Procurement Policy Agency took place either because it was supported by developments in information technology or digitalization in the era of the industrial revolution 4.0, continuous socialization / technical guidance, provisions of laws and regulations require its use, the existence of legal sanctions if it does not use it in the procurement process, the ease and usefulness obtained from its use, namely the simplicity of the process, transparency, and accountability of procurement.

The speed of adoption of e purchasing/e-catalog innovation in public drug procurement is inseparable from the influence of intrinsic and extrinsic factors as stated by Mardikanto (1993) that the speed of innovation adoption is influenced by many factors both intrinsic (inherent in their innovation) and extrinsic nature (according to / influenced by environmental conditions.The intrinsic qualities of innovation include: 1) Scientific information inherent / attached to innovation, 2) Values or advantages (technical, economic, socio-cultural, and political) inherent in innovation, 3) The level of complexity (complexity) of innovation, 4) Easy / whether innovation is communicated, 5) Easy / whether or not the innovation is tried (trial-ability), 6) Easy / whether the innovation is observed (observability). While the extrinsic nature of innovation includes: 1) The compatibility (compatibility) of innovation with the local environment (both the physical environment, socio-cultural, political, and economic capabilities of the community), 2) The level of the relative superiority of innovation offered, or other advantages possessed by innovation compared with existing technology that will be updated/replaced, both technical, economic excellence (the amount of cost), non-economic benefits, as well as the socio-cultural and political impacts that result (relative advantage).

Innovations made at the stage of procurement of drugs by e-purchasing through e-catalogs are innovations in the procurement process to ensure a fast, transparent, accountable process at an efficient price. Innovations made where the procurement of JKN capitation funds by public health center directly to distributors/pharmacies, procurement of drugs directly to distributors and partner pharmacies by the head of the hospital pharmacy installation without going through a mechanism by procurement officials or Commitment Officer, drug relocation between public health center is an administrative innovation because it deals with new policies to ensure the availability of drugs in health centers and hospitals.

C. Distribution and Storage of Public Drugs and their Dynamics of Innovation

Overview of Public drug storage and distribution for basic health services in Kupang City, Belu, and Malaka District as shown in table 6.

Table No. 6: Drug Storage and Distribution and Innovation Dynamics in Kupang City, Belu District, and Malaka District

Drug Storage and Distribution	**Kupang City**	**Belu District**	**Malaka District**	**The innovation of Drug Storage and Distribution Stage**
Storage and Distribution System	One Gate	One Gate	One Gate	The distribution of drugs to the public health center is carried out by the health department pharmacy officer once a month in Kupang City, Belu District, and Malaka District, which is supported by the distribution budget.
Storage facilities and infrastructure	Room/warehouse, data processing equipment, communication equipment, shelves, pallet, cold storage facilities available adequate	Room/warehouse, data processing equipment, communication equipment, shelves, pallet, cold storage facilities available adequate	Room/warehouse, data processing equipment, communication equipment, shelves, pallet, cold storage facilities available adequate	
Method of Storage	Based on dosage forms, alphabetically and using FIFO/FEFO Based on dosage forms, alphabetically and using FIFO/FEFO	Based on dosage forms, alphabetically and using FIFO/FEFO Based on dosage forms, alphabetically and using FIFO/FEFO	Based on dosage forms, alphabetically and using FIFO/FEFO Based on dosage forms, alphabetically and using FIFO/FEFO	
Actions upon	1. Performed	1. Performed	1. Performed	

acceptance	administrative and physical examination of drugs, filled in stock cards and computers 2. Not yet using the e logistic application for recording drug stocks 3. Performed administrative and physical examinations of drugs, filled in stock cards and computers updated every three months 4. Not yet using the e logistic application for recording drug stocks	administrative and physical examination of drugs, filled in stock cards and computers 2. Not yet using the e logistic application for recording drug stocks 3. Performed administrative and physical examinations of drugs, filled in stock cards and computers updated every three months 4. Not yet using the e logistic application for recording drug stocks	administrative and physical examination of drugs, filled in stock cards and computers 2. Not yet using the e logistic application for recording drug stocks 3. Performed administrative and physical examinations of drugs, filled in stock cards and computers updated every three months 4. Not yet using the e logistic application for recording drug stocks	
Handling of damaged and expired drugs	Collected with damaged and expired drugs from the public health center and carried out annihilation every 2 years	Collected with damaged and expired drugs from the public health center and extermination	Collected with damaged and expired drugs from the public health center and extermination	
Drug Distribution Process	1. Public health center deliver LP/LPO 2. Preparation of drugs and administration on request 3. Dispatch of drugs by pharmaceutical installation officers in the health office within 2-4 days after the request 4. Public health center distribute	1. Public health center deliver LP/LPO 2. Preparation of drugs and administration on request 3. Drug delivery by the pharmacy installation officer in the health office within 2-3 days after the request to the Public health center 4. Distribution to	1. Public health center deliver LP/LPO 2. Preparation of drugs and administration on request 3. Drug delivery by the pharmacy installation officer in the health office within 2-3 days after the request to the Public health center 4. Distribution to	

	medicine room drug for patient services, depot, Pustu, Poskeskel, Poskesdes, polindes, posyandu and for social services, mass treatment as needed	hospitals for urgent needs (loan status) 5. Distribution for social services and mass treatment 6. Public health center distribute medicine room drug for patient services, depot, Pustu, Poskeskel, Poskesdes, polindes, posyandu	hospitals for urgent needs (loan status) 5. Distribution for social services and mass treatment 6. Public health center distribute medicine room drug for patient services, depot, Pustu, Poskeskel, Poskesdes, polindes, posyandu	
Drug distribution Costs	Available	Available	Available	
Frequency Distribution	Once a month	Once a month	Once a month	

Source: Primary data processing

Management of drug storage and distribution for basic health services in the Pharmacy Installation of the Health Office of the City of Kupang, Belu District, and Malaka District and the public health center based on the results of in-depth interviews with the head of the pharmaceutical installation and focus group discussions with the drug management at the public health center so far have been going both according to guidelines for the management of public drug issued by the Ministry of the Health Republic of Indonesia.

The implementation of a one gate system in drug storage and distribution results in efficiency and effectiveness in public drug management. All drugs are stored in pharmaceutical warehouses that have been equipped with adequate facilities and infrastructures and a storage system has been implemented that can guarantee the quality and efficacy of the drug is maintained.

Drug distribution is also done one door from a pharmaceutical installation. Drug distribution to the public health center is done once a month for routine service needs, and in certain circumstances such as outbreaks and disasters, additional distribution will be done as needed. Drug distribution to Public health center is carried out immediately (2-4 days) after receiving the Drug Request and Report Sheet and there is a budget available for drug distribution.

Health centers after receiving drugs from pharmaceutical installations have carried out storage and distribution properly following public drug management guidelines set by the Ministry of the Health Republic of Indonesia. Storage is carried out at the public health center warehouse which has been equipped with adequate infrastructure. The distribution of drugs from the public health center for service needs at the auxiliary public health center, mobile health posts, village health posts, posyandu is carried out on-demand using a special drug request and report sheet format.

Anggreini (2017) in the study of Efficiency and Effectiveness of the Implementation of the One-Stop Drug Distribution System at the NTT Province Vaccine and Health Supplies Drug Management Unit found that the accuracy of drug distribution at the East Nusa Tenggara Province's Povabekes Technical implementation Unit was supported by initial coordination between District/City and Province were before sending a request letter medicine, the District/City has communicated with the program or Technical implementation Unit to inform the planned drug request to ensure that the needed drugs are available or not available at the East Nusa Tenggara Povabekes Technical implementation Unit. Drug demand that enters the province from the district/city is analyzed by the drug needs of the program and adjusted to the availability of drugs in the warehouse. The drugs served are not following the District/city request because the requested drugs are not available, are not following the drug needs analysis program, or adjusted to the drug packaging. Analysis of drug needs of the program is carried out according to targets, coverage, cases, and adjusted to the storage capacity of drugs in the District/City.

The description of the distribution process at East Nusa Tenggara Province's Povabekes Technical implementation Unit is like the distribution of drugs from the Pharmacy Installation of the City of Kupang, Belu, and Malaka District Health Centers to the public health center. Requests from the public health center based on the Use Report and Drug Request Sheet are analyzed by the pharmaceutical installation officer. Not all drug requests from public health centers are fulfilled based on the type and amount requested after an analysis of the use and the remaining available stock, storage capacity at the public health center taking into account the availability of drugs in the pharmaceutical installation warehouse.

The description of the process of storing and distributing public drugs for the same basic health services was raised by Muchlis (2016) who is evaluating drug management in Lhoksemawe City revealed that the drugs that had been received and examined were stored in the

pharmaceutical warehouse of the Lhokseumawe City Health Office. Storage of drugs in the Health Service uses the principle of FIFO (First In First Out), which is drugs that arrive early must be issued first. FEFO (First Expired First Out), which means an earlier drug that has expired must be released first. Damaged or expired drugs are separated from other good drugs and stored outside the warehouse. The process of storing drugs in the drug storage warehouse at the public health center has not followed the proper storage rules, such as there are still drugs that are placed on the floor because of insufficient storage shelves. Likewise, the recording of drug stock cards is not routinely done. Drug distribution at the Lhokseumawe City Health Service will be carried out if the proposed drug has been approved by the Head of the Lhokseumawe City Health Service after a drug use report and request sheet data review has been conducted to determine the amount and type of drug to be distributed to the Public health center. Drug distribution from the Health Service to the Public health center is carried out by taking it directly to the pharmaceutical warehouse every three months. There are still quantities and types of drugs that are not following Public health center requests. The supervision and evaluation of drug management in Public health center has not been carried out effectively and efficiently.

The difference with the process of storage and distribution in the City of Kupang Health Office, Belu District, and Malaka District lies in several things: 1) The drug warehouse in the Public health center has adequate room capacity and facilities for drug storage including cold storage and the public health center warehouse capacity has become considerations in fulfilling public health center drug requests, 2) Record of stock cards in pharmaceutical warehouses based on observations that have been carried out routinely and completely in recording, 3) drug distribution is carried out by pharmaceutical installation officers every month so that no drug accumulation exceeds the capacity of drug warehouses in the public health center.

Storage and distribution of drugs for referral health services in S.K. Lerik Hospital, Mgr. Gabriel Manek, SVD Hospital RSUPP Betun Hospital in table 7.

Table No. 7: Storage and Distribution of Drugs in RSUD S.K. Lerik, RSUD Mgr. Gabriel Manek SVD, RSUPP Betun

Storage and Distribution	**S.K. Lerik Hospital**	**Mgr. Gabriel Manek, SVD Hospital**	**RSUPP Betun Hospital**	**The innovation of Drug Storage and Distribution Stage**
Storage and distribution system	One Gate	One Gate	One Gate	The use of the Hospital Management Information System (SIMRS) application in the storage and distribution of drugs in the S.K. Lerik Hospital
Storage Facilities and Infrastructure	Room/warehouse, data processing equipment, communication equipment, rack, pallet, cold storage facilities are available	Room/warehouse, data processing equipment, communication equipment, rack, pallet, cold storage facilities are available	Room/warehouse, data processing equipment, communication equipment, rack, pallet, cold storage facilities are available	
Storage Method	Based on the dosage form, alphabetically and using FIFO/FEFO	Based on the dosage form, alphabetically and using FIFO/FEFO	Based on the dosage form, alphabetically and using FIFO/FEFO	
Actions at Acceptance	Administration and physical examination of the drug are carried out, inputted data on Hospital Management Information System application	Administration and physical examination of the drug are carried out, filled in stock cards and computers	Administration and physical examination of the drug are carried out, filled in stock cards and computers	
Handling of Damaged and Expired Drugs	Collected and kept separately to be destroyed	Collected and kept separately to be destroyed	Collected and kept separately to be destroyed	
How to Distribute	1. On request pharmacy through Hospital Management Information System application 2. From the drug warehouse, it is distributed to the pharmacy for outpatient and overnight care services based on prescriptions received through Hospital Management Information System application	1. Based on pharmacy request 2. From drug warehouses distributed to pharmacies for outpatient and prescription care Warehouses also distribute drugs to depots for VK services	1. Based on pharmacy request 2. From drug warehouses distributed to pharmacies for outpatient and prescription care 3. Distribution to inpatient rooms using a one-day dose system 4. The warehouse does not provide distribution to treatment/action rooms	

	3. The warehouse does not serve distribution to treatment/action rooms		-	

Source: Primary data processing

As illustrated in table 7 that the storage and distribution of drugs in hospitals for referral health services begin with checking the completeness of the administration and physical examination of the drugs received from the procurement results. This stage is important to ensure the truth or suitability of the drug received with the drug procurement and delivery documents. Physical examination is important to ensure the quality of drugs received according to the specifications of the drug requested including expiration time. The next stage is recording and structuring in the warehouse of the drugs received.

S.K. Lerik Hospital has used the Hospital Information System application in recording drug stocks that can be accessed at any time. Mgr. Gabriel Manek SVD Hospital and RSUPP Betun Hospitals still use the manual recording on stock cards and book receipts and records on computers. Storage of drugs received is carried out in drug warehouses which are equipped with adequate storage facilities and infrastructure to ensure the quality, efficacy, and safety of drugs is maintained. Mgr. Gabriel Manek, SVD Hospitals' conditions of storage of drugs in warehouses are inadequate due to the limitations of drug storage rooms and supporting infrastructure which would certainly affect the quality, efficacy, and safety of stored drugs. Drug storage systems in all three hospitals have been carried out well based on dosage forms, alphabetical, and using the principle of FIFO/FEFO. Handling of damaged and outdated drugs has been separated from other drugs and subsequently carried out annihilation.

The distribution of drugs in SK Lerik Hospital and RSUPP Betun Hospital is carried out based on requests from hospital pharmacies which are then used for services for outpatients and patients based on doctor's prescription. Drug distribution in Mgr. Gabriel Manek SVD Hospitals in addition to the hospital pharmacy for outpatient and outpatient services as well as to the depot in the VK room.

One of the innovations carried out in the storage and distribution of public drug for referral health services is the innovations carried out by the S.K. Lerik Hospital. This innovation is

related to the use of the Hospital Management Information System (SIMRS) application in drug storage and distribution. The use and benefits of this application as conveyed by the informant Director of the S.K Lerik Hospital and the head of the pharmaceutical installation at the S.K.Lerik Hospital as follows:

"SIMRS starts in 2018, so he starts from the supply of drugs to the service that has been using SIMRS. From the warehouse to the supply of the drug to the service at the pharmacy, the SIMRS system has been used. He has made it easier by the system, so it's easier, easier for officers to manage drugs and supplies anyway ... There are two of us, the system is in the medical service and the pharmacy so the pharmacy has started from the drug into the drug out all have been recorded there by the system. If the medical system is different, but the system has been connected as one ... So the doctors just need to press automatically, the pharmacy is accepted and served, so they just have to look at the system. So they cut drugs of all kinds, lacking stock, all in stock already exist in the system ".

The innovation carried out by S.K.Lerik Hospital with the DPI feature in Hospital Management Information System application is an innovation process and administration according to Halvorsen (2005) that greatly facilitates or assists in planning, procurement, storage, and use of drugs in public drug management for referral services in hospitals. Hariana, et al., (2013) in a study on the Use of Hospital Management Information Systems (HMIS) in DIY revealed that 82.21% of DIY hospitals had adopted the HMIS system. HMIS is used mostly for administrative functions in the form of electronic patient registration (79.17%) and billing systems (70.83%). Although still small, clinical functions have been used for medical documentation (58.33%), electronic prescribing (22.92%), laboratory examination results (39.58%), and pharmaceutical warehouse inventory systems (60.42%). Most hospitals still focus on administrative functions rather than clinical functions. The availability of IT units and IT personnel influence the level of HMIS usage.

The results of this study revealed that not all hospitals use HMIS in their service operations. This is in line with the results of our study that Mgr. Gabriel Manek, SVD Hospital, and RSPP Betun Hospital have not used HMIS. The results of this study revealed that of 82.21% of DIY hospitals that had adopted the HMIS system, which used a pharmaceutical warehouse inventory system (60.42%). This shows that no HMIS adopted by hospitals uses a pharmaceutical warehouse inventory system. S.K.Lerik Hospital has innovated by including a pharmaceutical warehouse inventory system called DPI for drug storage and distribution.

Recording drug stocks during drug storage and distribution, drug requests from service units (Public health center to Pharmacy Installation, Health Service, and hospital pharmacies to drug storage) which are carried out manually by the Pharmacy Installation of Health Service Offices, Public health center, Mgr. Gabriel Manek, SVD Hospital, and RSUPP Betun Hospital have an impact on 1) Recording and calculation errors that result in differences between the physical drugs and records on the stock card, 2) It takes a long time to administer the recording and distribution of drugs, 3) Public health center and pharmacies do not know the availability of drugs in pharmaceutical installations and drug warehouses whether they are still available or out of service so that service to patients is not optimal because the service officers think the drugs in the warehouse are not yet available even though the drugs are available from the procurement. This incident as stated by the informant as follows:

"We are still recording drugs in warehouses manually in reception books and stock cards and our drug requests to the room are done manually. Once, we thought the medicine ran out because it had been empty for 2 weeks, so when there was a prescription, we told the doctor that the medicine was finished, so if it could be replaced, the medicine had arrived in the warehouse a few days ago. " (Head of Pharmacy Installation of RSUPP Betun)

In distributing drugs for basic health services at the public health center, the innovations made were distributed by the health department pharmacy installation officer, which was supported by the availability of a distribution budget and the implementation of drug distribution to the public health center once a month. These innovations have provided benefits such as the absence of a buildup of drugs in the public health center drugstore because the amount of drugs distributed is only to replace the use of drugs a month and maintain optimum stock so that the drug is kept safe and quality during storage until its use. In addition to the distribution carried out by the pharmacy service officer of the health department, the distribution of drugs can be immediately carried out for the needs of drugs in the health center. As the informants said in the interviews and informants in the focus group discussions that it took less than two to three days after drug use reports and request sheets were received, the officer had already delivered the medicine to the public health center.

Dasgupta and Gupta (2009) understand innovation as success in introducing new things that have use values such as methods, techniques, practices, new products, or services. Roger (1983) also defines innovation as an idea, idea, practice, or object or object that is realized and accepted as something new by a person or group to be adopted.

Drug distribution by pharmaceutical installation officers immediately after receiving the drug use reports and request sheets and frequency of distribution once a month is a new practice that has use-value in the form of guaranteed quality and efficacy of the drug because it is stored in the warehouse according to standards and the drug can be delivered quickly so that there is no vacancy in the public health center which hinders service drug in patients. This new practice has been accepted and adopted in the drug distribution system from pharmaceutical installations to public health centers both by pharmacy installation officers and by public health center drug managers.

Kokilam, Joshi, Kamath (2015) Assessment of Public Drug Supply Management Systems at the Suburban Basic Health Center in Udupi District, Karnataka, India concluded that overall, it can be observed that some areas can be improved in public drug supply systems to improve drug accessibility Essential drug at the primary health care level. Combining standard strategic methods with information and communication technology interventions in processes related to purchasing, selection, quantification, distribution, human resource management, and inventory management will drive the system to achieve good health for all. The results of this study illustrate the importance of innovation in all stages of public drug management with information and communication technology interventions at the drug distribution stage including the purchase/procurement stage, the selection stage, the calculation of drug needs, and human resource management and inventory will increase public accessibility of essential drug drugs in services basic health.

The storage and distribution of drugs carried out for basic health services in Kupang City, Belu District, and Malaka District currently do not utilize the development of information and communication technology to collaborate in standard methods in the guidelines for drug storage and distribution. This is an opportunity for innovations based on information and communication technology in the future so that the storage and distribution process is carried out efficiently and effectively to ensure the availability of drugs at the public health center.

D. Use of Public Drugs and the Dynamics of Innovation

Drug use is a process that includes prescribing by doctors, drug services by the pharmacy as well as drug use by patients (MOH, 2006). In this research aspects of the use of drugs to be discussed are matters related to the management of drug services by the pharmacy which are included in the realm of public drug management, while prescribing drugs by doctors, used

by patients and services by pharmaceuticals which become the domain of medical services and clinical pharmacy outside aspects studied and discussed in this study.

In the use of drugs in Public health center in Kupang City, Belu District, and Malaka District, drug administrators routinely convey information about the availability of drugs and alternative options for drugs that are not available to drug users, namely the prescribing doctor. The existence of information about the availability of this drug as said by the drug management and the head of the public health center makes it easier for drug users to choose the drug to be used without interfering with the authority of the drug user in determining drugs choices. As said by the Head of Belu District Health Center, that prescription writing is an art so it is possible to use different drugs for the same disease case, so that if there is information about the availability of drugs the doctor as the prescription writer will be able to choose based on the available drugs. This will avoid writing prescriptions for drugs that do not exist or are not used even if they are available. The informants also said that when there were cases or illnesses where the choice of medicine was not available at the public health center according to the national formulary, the doctor as a drug user would choose to refer to the hospital as a referral health facility, whereas if there were no choice drugs available at the health center then the doctor as the user the drug will make an outside prescription or copy a prescription with the patient's consent. The description of the use of drugs for basic health services in Kupang City, Belu District, and Malaka District is shown in table 8.

Table No. 8: Public Drug Use in Kupang City, Belu District, and Malaka District

Kupang City	**Belu District**	**Malaka District**	**Innovation Stage of Drug Use**
Drug managers routinely submit data on drug availability to drug users	Drug managers routinely submit data on drug availability to drug users	Drug managers routinely submit data on drug availability to drug users	1. Provision of information regularly about the availability of drugs and alternative options for drugs that are not available to drug users, namely the prescription doctor 2. Refer to the hospital as a referral health facility if drugs are not available at the public health center according to the
Exchange of information on the availability of drugs between Public health center through WA groups for lending between Public health center	Doctors make external prescriptions for drugs that are not available with the patient's consent	Doctors make external prescriptions for drugs that are not available with the patient's consent	
Purchase directly to the distributor or pharmacy for drug services at the	Cases, where medicine is not available at the	Cases, where medicine is not available at the	

health center if the drug is not available	public health center according to the National Forum, are referred to the hospital	public health center according to the National Forum, are referred to the hospital	National Formulary 3. Make an external prescription with the patient's consent.
Doctors make external prescriptions for drugs that are not available with the patient's consent			
Cases, where medicine is not available at the public health center according to the National Forum, are referred to the hospital			

Source: Primary data processing

Based on this description, it can be seen that the efforts made by the drug manager at the health center and drug users, namely doctors, so that patients can get drugs following the disease being diagnosed. These efforts are carried out so that the health services provided at the public health center are following the Minimum Service Standards as stipulated in Minister of Health Regulation number 4 of 2019 concerning Technical Standards for Fulfillment of Basic Service Quality in Minimum Services Standards in the Health Sector.

The use of the public drug for referral health services in Kupang City, Belu District, and Malaka District are respectively carried out in S.K.Lerik District Hospital, Mgr District Hospital. Gabriel Manek, and RSUPP Betun as in table 9.

Table No. 9: Use of Drugs in S.K. Lerik Hospital, Mgr. Gabriel Manek SVD Hospital, RSUPP Betun Hospital

Medication use	**S.K. Lerik Hospital**	**Mgr. Gabriel Manek, SVD Hospital**	**RSUPP Betun Hospital**	**Innovation Stage of Public Drug Use**
Prescribing	1. Use e pres in the Hospital Management Information System application 2. Study prescriptions and education of patients using the feature DPI in the Hospital Management Information System	Manual	Manual	1. Application of Hospital Managemen Information System in prescribing and prescribing services at S.K. Lerik Hospital 2. Cooperation with partner pharmacies

	application			in Mgr. Gabriel Manek Hospital and RSUPP Betun Hospital
Recipe service cooperation	Don't have a partner pharmacy	Have a partner pharmacy	Have a partner pharmacy	
Service system	Centralized in hospital pharmacies for outpatient and overnight care services	Centralized in hospital pharmacies for outpatient and overnight care services and has 1 depot	Centralized in hospital pharmacies for outpatient and overnight care services	

Source: Primary data processing

The use of drugs in RSUD S.K.Lerik as conveyed by informants of hospital directors and heads of pharmaceutical installations in in-depth interviews has implemented Hospital Information Systems (SIMRS) in drug use. Recipe writing and prescription service are done through the SIMRS application. The use of this application will reduce prescription reading errors and assist in the preparation of drugs by pharmacists because a review of prescriptions and information on drug use has been made available through the application.

In the use of drugs in the Pharmacy Installation of S.K.Lerik Hospital, Mgr. Gabriel Manek, SVD Hospital, and RSUPP Betun Hospital implemented a centralized system in which drug services for outpatients and hospital patients were carried out in hospital pharmacies. With this system, monitoring and supervision of drug use can be carried out properly.

In drug treatment to patients, to overcome the vacancy of the Mgr. Gabriel Manek SVD Hospital and RSUPP Betun Hospital collaborated with partner pharmacies. This collaboration is intended for prescription drug services by partner pharmacies if there is no drug available at the hospital pharmacy. Hospital S.K. Lerik as said by the director of the hospital will also carry out this collaboration to fulfill the vacancy of the drug in the hospital and currently to anticipate it utilizing the frequency of drug order is done as needed.

In the Minister of Health Regulation number 4 of 2019 regarding Technical Standards for Fulfillment of Basic Service Quality in the Minimum Service Standards in the Health Sector, it is emphasized that the government has the responsibility to guarantee that every citizen receives quality health services according to their needs. As a basic need, each individual is responsible for fulfilling the needs of his life and the people he is responsible for, so meeting the needs of the community for health is the responsibility of every citizen. Although efforts to meet the needs of the health sector are inherent in every citizen, given that the

characteristics of health goods/services cannot be managed/produced directly by each citizen, but there must be other parties that specifically produce and provide, the supply of goods/health services require government involvement to 1). Guarantee the availability of health goods/services that can be obtained by citizens who need them according to their needs, and 2). Providing health goods/services for citizens who are unable to meet the needs in the health sector. Types of basic services at the District/City Regional Health Minimum Service Standards consist of: a. Health services for pregnant women; b. Maternity health services; c. Newborn baby health services; d. Toddler health services; e. Health Services at the age of primary education; f. Health services at productive age; g. Health services in the elderly; h. Health services for patients with hypertension; i. Health services for people with diabetes mellitus; j. Health services for people with severe mental disorders; k. Health services for people suspected of tuberculosis; and l. Health services for people at risk of becoming infected with a virus that weakens the human immune system (Human Immunodeficiency Virus) which is an increase/promotive and prevention/preventive. Most types of basic services at the District/City Regional Health Minimum Service Standards use drugs so that their availability with the appropriate type, quantity, and quality is an important aspect in fulfilling the Minimum Service Standards. Therefore, it can be understood that drug managers in public health centers make innovations in the process of using drugs in basic health services to meet the Minimum Service Standards as outlined in the Minister of Health Regulation.

The innovation carried out by drug managers in the public health center is to establish communication with drug users to regularly submit data/information on the availability of drugs at the public health center. As stated in a group discussion with the management of public health center drugs in the City of Kupang, Belu District, and Malaka District that besides submitting data on the availability of drugs regularly also accompanied by alternative drugs for cases of the same disease. With this information drug, users can choose or use these alternative drugs in prescribing so that drug services to patients run optimally and avoid drugs that are not used in service at the health center.

Innovations in the use of drugs in Public health center in Kupang City, Belu District, and Malaka District are also in the form of making prescriptions for a drug that are not available at the Public health center and there is no alternative drug to obtain patients independently at the pharmacy with the patient's consent. As stated by the drug manager in a focus group

discussion that even though this has been attempted to be minimized, this still happens. In these conditions, the focus of the service provider is how the patient gets the drug, so that with the patient's consent a prescription is given to independently or at his own expense get the drug to consent.

Specifically for the public health center in Kupang, innovation in the use of the drug is to make purchases directly to distributors or other pharmacies to meet the vacancy of drugs that occur at the time of service. This breakthrough was felt to be very useful because the purchasing process could be immediately carried out to meet the needs of drugs that were not available at the time of service by using the JKN capitation budget available in the public health center account.

Innovations made by the Public health center and S.K. Lerik Hospital, Mgr. Gabriel Manek SVD Hospital, RSUPP Betun Hospital according to Osborne and Brown (2005) is a form of development change and expansionary innovation. Developmental change is the most basic form of the change agenda that occurs at the level of service improvement using a modification approach so that regardless of the level of needs of customers while expansionary innovation is carried out to meet customer needs by using the old form of service.

Government organization innovation is the process of creating, developing, and implementing new ideas that can provide better benefits such as reducing costs, increasing efficiency, and effectiveness of services (Mulgan, 2014; Kobylinska & Biglieri, 2015).

The innovation of government organizations is supported by the emergence of new ideas that can move several lines of the organization that was initially rigid. Harris, (2006) said the post-bureaucracy era was marked by the hybrid role played by organizations with open and diverse characteristics by imposing new, more flexible organizational structures. Post-bureaucracy gave birth to new patterns and forms that were more disaggregated, cooperating with various parties including the private sector.

Osborne dan Brown (2005) classifies the types of innovations carried out by government organizations into four different types based on the level of service or product that can be provided and the level of needs desired by the community. The four types of innovation are developmental change, expansionary innovation, evolutionary innovation, and total innovation. Developmental change is the most basic form of the change agenda that occurs at

the level of service improvement using a modification approach so that regardless of the level of needs of the customer. Osborne does not refer to this type as a form of innovation but only organizational development. Expansionary innovation is carried out to meet customer needs using the old form of service. Conversely, evolutionary innovation innovates based on changing the form of services regardless of the level of customer needs. While total innovation is a new type of service for a combination of new ways of finding adapted to the level of customer needs.

One of the factors driving the emergence of innovation actions in government organizations is the change in demands for improving the quality of services from the external environment and stakeholders and is also driven by policies implemented by the central government through the program agenda to accelerate bureaucratic reform. One of the agendas of bureaucratic reform is carried out through public service innovation programs. The target to be achieved from this program is the ideals of world-class government (World Class Government) which is expected to be realized in 2025 (Imanuddin, 2016).

E. Supporting Management (Organization, Human Resources, Budget, and Information Systems)

Supporting management figures in the form of organization, human resources, budget, and information systems for managing public drug for basic health services in health centers and referral health in hospitals in Kupang City, Belu District, and Malaka District are presented in Table 10.

Table No. 10: Organizations, Human Resources, Budget, and Drug Management Information Systems in Kupang City, Belu District, and Malaka District

Supporting Management/City & District	Organization	Human Resources (HR)	The Budget	Information System
Kupang City Health Office	Technical implementation Unit	7 pharmacy staff in Technical implementation Unit and 34 pharmacy staff in 11 Public health center	DAK sourced, JKN Capitation and available in sufficient quantities	Manual based on recording and reporting
Belu District Health	Pharmaceutical	9 pharmacy	DAK sourced,	Manual based on

Office	installations under the Pharmacy Section, Health Resources Sector	staff in the pharmacy section, 39 pharmaceutical staff in 17 health centers	JKN Capitation and available in sufficient quantities	recording and reporting
Malaka District Health Office	Pharmaceutical installations under the Pharmacy Section, Health Resources Sector	10 pharmaceutical staff in the pharmaceutical section, 32 pharmaceutical staff, and nurses in 21 health centers	DAK sourced, JKN Capitation and available in sufficient quantities	Manual berdasarkan pencatatan dan pelaporan
S.K. Lerik Hospital	Non-structural pharmaceutical installations under the service sector	Pharmacist 4, pharmaceutical technical staff 13, and 1 administrative staff	Self-supporting as Regional Public Service Agency and available in sufficient quantities	Use the DPI feature in the Hospital Managemen Information System application
Mgr. Gabriel Manek, SVD Hospital	Non-structural pharmaceutical installations under the service sector	Pharmacist 8, pharmaceutical technical staff 12, and 2 administrative staff	Self-supporting as Regional Public Service Agency and available in sufficient quantities	Manual based on recording and reporting
RSUPP Betun Hospital	Non-structural pharmaceutical installations under the service sector	Pharmacist 4, pharmaceutical technical staff 8, and 2 administrative staff	Self-supporting as Regional Public Service Agency, APBD and available in sufficient quantities	Manual based on recording and reporting

Source: Primary data processing and secondary data

The public drug management organization in the Kupang City Health Office is in the form of a Technical Implementation Unit which is authorized under the Mayor Regulation number 5 of 2009 concerning the Organization and Work Procedure of the Kupang City Office and Agency to coordinate between programs, coordination with related parties and all public drug managers and health supplies from the central, provincial, city level to the level of public health center effectively and responsibly. This situation is different from the public drug management organizations in the Belu and Malaka District Health Offices where the

pharmaceutical installation is part of the Pharmacy Section which is led by a Pharmacist in charge of the pharmaceutical installation. Technically the operational work is carried out by the person in charge of the pharmaceutical installation but structurally it is the responsibility of the Head of the Pharmacy Section under the Head of Health Resources.

Description of the form of city/district pharmaceutical installation organization as a Technical Implementation Unit (UPT) and as part of a pharmaceutical section such as the theory proposed by Mintzberg (1980) that there are five types of organizational designs namely simple structure, machine bureaucracy, professional bureaucracy, divisional sized form, and adhocracy, and what the government organization runs is machine bureaucracy, professional bureaucracy. Bureaucracy machines such as the description of pharmaceutical installations as part of the pharmaceutical section, run organizations with work processes that are standardized with SOPs, are very formal with the use of work specialization, decision making is centralized with structures using multiple levels of command, and communication patterns are formal. Professional bureaucracy design such as Technical Implementation Unit, the organization remains bureaucratic with standardization of behavior (skills), prioritizing coordination that supports decentralization, empowering professional HR in carrying out the main tasks of the organization by granting autonomy to carrying out tasks.

Organization of S.K.Lerik Hospital, Mgr. Gabriel Manek SVD Hospital and Betun RSUPP Hospital are regional apparatus organizations formed by Regional Regulations or Regents/Mayors Regulations, while the stipulation as Regional Public Service Agencies is carried out by Regulations of Mayors or Regents.

The quality of human resources is based on the educational background as said by the informants that it consists of pharmacists, pharmacy technical staff, and administrative staff in the pharmaceutical installations of the City of Kupang, Belu, and Malaka Health Services. All public health centers in Kupang City and Belu District have pharmacy staff as drug administrators and several Kupang City Public health centers and Belu District manage pharmacists. Based on this educational background, it can be said that the qualifications of drug managers in the public health center in Kupang City and Belu District are following the provisions of the legislation requiring drug management at the community health center. Different conditions occur in the district of Malaka where there are a number of the public health center where the medical management staff is not pharmaceutical workers.

Regarding the number of drug management human resources in pharmaceutical installations, health offices, and public health centers, it varies depending on the workload of drug management. Based on data from the informants it is said that the number of drug management personnel currently available in the Pharmacy Installation of the City of Kupang, Belu, and Malaka District Health Offices is sufficient to carry out the task of managing drugs. Likewise, the number of drug management human resources at the health center is also felt to be adequate to carry out the task of managing drugs at the health center. Regarding the number of drug management personnel in pharmaceutical installations at the district/city health office so far there is no ideal number of standards. The Ministry of Health Republic of Indonesia (2017) in the Technical Guidelines for Managing the Performance Indicators of the Management of Public Drug and Health Supplies in 2017-2019 gives the highest score for pharmaceutical installations with pharmacists in charge, followed by Pharmaceutical Technical Personnel. The highest score is given to the pharmaceutical installation with a minimum number of 7 people.

S.K. Lerik Hospital, Mgr. Gabriel Manek SVD Hospital and RSUPP Betun Hospital are type C hospitals. According to Minister of Health Regulation number 56 of 2014 concerning Hospital Classification and Licensing, the number of pharmaceutical personnel for type C hospitals consists of at least one pharmacist as the head of the hospital pharmacy installation, two pharmacists on duty in hospitalization assisted by at least four pharmacy technical personnel, four inpatient pharmacists assisted by at least eight pharmacy technical personnel, one pharmacist as the coordinator of reception, distribution, and production who can concurrently perform clinical pharmacy services inpatient or outpatient and assisted by pharmaceutical technical staff whose numbers are adjusted to the workload of hospital pharmacy services. Based on information from in-depth interviews with hospital directors and heads of hospital pharmacy installations, although this ideal condition has not yet been reached, the number of staff available with educational qualifications is needed to carry out the task of drug management and clinical pharmacy services at the hospital.

Information systems have three important roles in supporting the process of health services, namely: supporting the processes and operations of health services, supporting staff and management decision making, and supporting various strategies for competitive advantage (O. Brien, J., 2005).

Drug Management Information System at the district/city health office is expected to be able to manage data on drug receipts from suppliers, drug distribution to the public health center, administration of drugs to other than public health center, receipt of usage, and request data from the public health center, management of drug supplies in pharmaceutical installations and public health center, and bookkeeping reports.

Information is the driving force of the logistics management cycle. Without information, the logistics system will not run perfectly. A logistics manager will gather information on each activity in the logistics cycle and analyze it for future action. Generally, logistics management will be supported by the Logistics Management Information System. Logistics management information system is a system for recording and reporting logistic drugs and medical consumables either paper-based or electronic. Logistics management information system is used to aggregate data, analyze, validate, and display data (from all levels of logistics management in an area), which can be used to make logistical decisions and manage drug supply chains and medical consumables. A functioning logistics management information system will provide decision-makers throughout the supply chain with accurate, timely, and precise data, such as drug availability, drug stock reduction and adjustments, drug use, requests, problems, delivery status, and information about managed drugs and medical consumables assets. (USAID, 2012)

Based on in-depth interviews with the head of the health department, the hospital director, the head of the health department's pharmaceutical installation, and the hospital, information was obtained that the drug management information system carried out in the City of Kupang, Belu, and Malaka District Health Offices was still carried out manually in the form of recording and reporting. The drug management information system which is the application version of the drug logistics developed by the Ministry of the Health Republic of Indonesia cannot be adopted because of various factors such as limited human resources, poor warehouse designation making it difficult to collect data on drugs, applications that often change because they continue to be refined, limited access. The drug management information system in S.K. Lerik Hospital has been running well with the implementation of Hospital Management Information System allocation which has accommodated the needs of public drug management, while at Mgr. Gabriel Manek SVD Hospital and RSUPP Betun Hospital management information systems still rely on manual recording and reporting. A public drug management information system based on manual recording and reporting has

several weaknesses, namely, data cannot be obtained quickly when needed for decision making at each stage of drug management, errors in recording and reporting can occur resulting in errors in the information reported for taking a decision.

Rahmawatie and Santosa (2015) succeeded in developing a drug planning information system based on information and communication technology by combining the methods of consumption and epidemiological methods based on information and communication technology with the SDLC (System Development Live Cycle) method to help local governments, in this case, the Boyolali District Health Office in deciding to plan for the next year's drug procurement by determining the type and amount of drugs planned to be ordered effectively.

Fachriadi, et al. (2011), after analyzing drug management in the PKU Muhammadiyah Temanggung Hospital pharmaceutical installation found that information management was fully organized into a computer-based information system (CBIS). The use of information systems in pharmaceutical installations includes patient data input, drug usage data, drug price data, and drug storage data. The data is processed into information as material for making reports to be submitted to the parties - stakeholders in the hospital.

Information and communication technology is now an inevitable part of health organizations. Starting from hospitals, health centers, health offices, health training education organizations, insurance agencies, and various other health organizations must have information and communication technology with various types and capacities. What also varies is the ability of users and the organization itself to use it. On the other hand, experience shows that the application of many computer-based information systems fails. Dowling (1980) estimated that 45% of the development of computer-based information systems failed because of user resistance, even though it was technologically quite convincing. Computer-based information systems can be assessed based on cost/benefit criteria, timeliness, completeness, error rates, usability levels up to user satisfaction. Management information systems of several subsystems that all make a unified system consisting of sub-systems collecting, processing, analyzing, presenting information that ensures that the management system has information that is relevant for decision making.

The availability of a sustainable budget in sufficient quantities is one of the important factors as a supporter of public drug management in addition to the organization, human resources,

and information systems. As stated by informants from the Head of Health Office of Kupang City, Belu District and Malaka District that the budget for drug procurement and operational management of drug is sourced from non-physical DAK in the health sector and is available in sufficient quantities for one year's drug needs for basic health services. In addition to non-physical DAK funding from the health sector, to improve pharmaceutical services at the public health center in the National Health Insurance era, there is now also a budget with a percentage ranging from 25 percent of the total National Health Insurance funds at the public health center to procure consumable drug and medical materials. The National Health Insurance capitation-sourced budget that is in the public health center account should be utilized properly to overcome the problem of availability of the drug in the public health center which is incidental. For this reason, it is necessary to have a good arrangement in the procurement of capitation-sourced drugs by making technical guidelines that provide certainty or clarity for the head of the public health center or drug management in their use. The practice of using National Health Insurance capacity funds in the city of Kupang in the procurement of drugs can be used as an example so that the level of availability of drugs in health centers for drug services can be further improved.

The availability of funds is a very important supporter of the management of public medicine for basic health services. Ministry of Health Republic of Indonesia (2010), determines four indicators in measuring the performance of drug management in district/city health offices that relate to the availability of funds, namely the amount of drug procurement fund allocation, the percentage of drug procurement fund allocation to the total budget for health, the amount of drug cost per population, and the number of drug costs per prescription visit.

The source of the budget for the procurement of drugs in S.K.Lerik Hospital, Mgr. Gabriel Manek, SVD Hospital, and RSUPP Betun Hospital, as conveyed by the guest director of the hospital and the head of the pharmaceutical installation, are sourced from the hospital's independent funds as Regional Public Service Agency and for RSUPP Betun Hospital also supported by funds from the APBD. The available budget according to the speakers is very adequate to meet the needs of the drug in the hospital. Mahdiyani, et al (2018) in the Evaluation of Drug Management in the Planning and Procurement Phase in Muntilan Regional Hospital Magelang District in 2015 - 2016 revealed that the percentage of funds available with the total funds needed in 2015 was 100.19% and in 2016 amounted to 100.14 %. All expenses incurred by spending the Muntilan General Hospital Pharmacy

Installation can be met by the budget of the hospital. Inadequate funding for drug procurement is very influential on hospital services, with sufficient funds, the hospital can procure as needed so that it can guarantee the availability of drugs for patients. The allocation of funds from Muntilan Hospital is following the existing standard values. Funds received by hospitals come from two sources, namely from the Regional Budget and Regional Public Service Agency. APBD funds are used for the physical construction of hospitals, while funds used for the procurement of drugs and medical devices by the Pharmacy Installation are funds originating from Regional Public Service Agency funds, including drugs claimed by INA CBGS.

The Public Drug Management Innovation Model in Kupang City, Belu District, Malaka District, and the Recommended Innovation Model

In general, innovations carried out at each stage of sharpening public medicine for basic health services in the Health Office of Kupang City, Belu District, and Malaka District, public health center, and referral services at S.K.Lerik Hospital, Mgr. Gabriel Manek SVD Hospital, RSUPP Betun Hospital can be grouped into two namely public drug management innovation without information and communication technology intervention and innovation involving information and communication technology intervention. Innovations involving information and communication technology, namely public drug management in S.K.Lerik Hospital using the Hospital Management Information System application with Dynamic Pharmacy Inventory (DPI) feature, adoption of the electronic procurement application from Government Goods and Services Procurement Policy Institute in the procurement of drugs with e-catalogs and adoption of e-monev applications in reporting drug needs plans in stages to the Province and Ministry of the Health Republic of Indonesia by the health department pharmacy. Other innovations are innovations without information and communication technology intervention.

Innovations without information technology intervention are initiated by problems in the management of public drug that ultimately have an impact on the availability of drugs of the type, sufficient quantities, and quality that meet the standards when needed. The innovation model without the intervention of information and communication technology that is currently carried out is linear.

There are several innovation models developed/constructed starting from a very simple linear model, a stage model and a dynamic model of the organization (Tang, 1998; Cooper 1998; Padmore et al, 1997; Klein and Sora, 1996; Burgelman, 1983 in Gana, 2011).

Another view of the innovation model as suggested by Tapscott et al. (2000) is that it is based on b-web which is assumed to reduce transaction costs and change the marketing concept especially from 4P (product, price, place, and promotion) to the A, B, C, D, and E'S (anyplace, anytime, anyway shopping replaces place, b-webs customer drive revenue, communications webs, not promotion, the discovery of price replaced fix prices, experience replaces product). This web-based innovation model was also put forward by Malhotra (2001) who departed from the fact that electronic information technology was developing so fast, that the innovation model showed a paradigm shift not only in process transformation and workflow but also radical in all business models referred to as business the process of redesign to e-business innovation models.

Referring to the views of Tapscott et al. and Malhotra on web-based innovation models that are supported by rapid developments in the field of electronic information technology in the industrial revolution era 4.0, the authors propose a web-based drug logistics management innovation model or with electronic information technology intervention. This is in line and will support the achievement of the Ministry of Health Republic of Indonesia's strategic goals for 2015-2019. This innovation model will assist data management to help decision making in each process of the drug management cycle with the aim of 1). Monitor drug storage and movement at every level of health service in a supply chain system, 2). Ensuring the availability of pharmaceutical logistics in each health facility, 3). Facilitate logistical relocation between locations (regions) by considering the availability of drugs at each level and expiration date so that drugs and Medical Materials Consumables can be optimally absorbed both for routine service purposes and special circumstances (Roy et al, 2009).

An electronic logistics management system has been developed in the form of drug and medical materials consumables e -logistics applications for use at all levels of government pharmaceutical installations, namely districts/cities, provinces, and centers, but has not yet been adopted by the City of Kupang, Belu, and Malaka Health Offices. In public medicine management. The recommended/recommended management information system for public drug management in Kupang City Health Office, Belu District, and Malaka District are to build a recording and reporting system from the public health center with information

technology intervention so that data on acceptance, demand, and use, supplies replace the manual system with Proof of Goods Exit letter and drug use reports and request sheets in each public health center that can be accessed at any time by the city/district, provincial health office, the Ministry of the Health Republic of Indonesia. The recommended drug management information system can be its application developed by the District/City Health Office or part of the Public health center management information system) which can then be hybridized with the existing drug logistic application. With this application, the recording of drug data that is distributed, used, and stocked at the public health center can be done by each public health center, thereby reducing the workload of data entry at the pharmacy office of the health service which is an inhibiting factor. Belu District, and Malaka District. Another benefit to be gained from this innovation is that at the provincial level it can be seen that the level of drug availability is based on the type and amount and time of expiration in each public health center and pharmacy districts so that it is possible to relocate drugs from one district to another especially those close to it. As said by the informant that regulations related to regional assets are not yet possible for the shifting/relocation of drugs between districts/cities but it is possible for drug programs sourced from the Ministry of the Health Republic of Indonesia and distributed through the provinces.

This innovation recommendation is an effort to maximize the role of information and communication technology through the exchange of electronic data between information systems or bridging. With bridging, it is possible to reduce the burden of recording, reduce data entry errors, and speed up reporting time. It is undeniable that in some regions the drug management information system has been used where the information output can be integrated with the National E-Logistics Data Bank. Also, many regions have implemented public health center information systems that have the potential to do bridging with E-Logistics, especially for drug reception and reports. By applying an innovation model with information and communication technology interventions in the form of the application, public drug management will be formed for basic health services in the City of Kupang, Belu, and Malaka Health Services, two drug management cycles respectively in the District/City Pharmacy Installation and Public health center will be connected even in their respective cycles as in Figure 1.

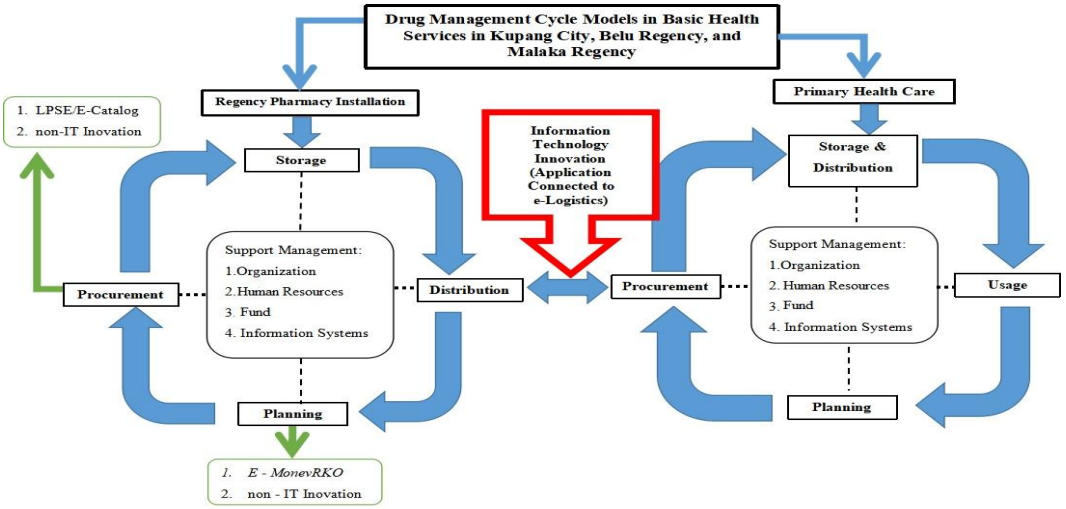

Figure No. 1: Public Drug Management Cycles for Basic Health Services in Connected Regency Pharmacy Installation and Public Health Center in the City of Kupang, Belu, and Malaka District Health Services

Public Drug Management Model for Basic Health Services after the Innovation (NADAGARI Public Drug Management Model)

The City Government of Kupang, Belu District, and Malaka District innovated public drug management for basic/first-level health services in Public health centers and referrals in hospitals according to community needs for quality health services, the development of information and communication technology in the industrial revolution era 4.0. Management of public medicine for basic health services in districts/cities involves the Provincial Health Officer, the Indonesian Ministry of the Health Republic of Indonesia, and the Republic of Indonesia Procurement Policy Agency. The Provincial Health Office compiles the drug needs reported through the e-monev to be subsequently reported to the Ministry of Health Republic of Indonesia of the Republic of Indonesia, provides a drug buffer stock for the needs of the District/City, distributes drug programs from the Ministry of the Health Republic of Indonesia to the District/City, supervision/guidance of drug management towards the District/City City. The Ministry of the Health Republic of Indonesia compiles all drug needs for a year from all Regencies/Cities through the Provincial Health Office to be used as a basis for conducting tenders with the pharmaceutical industry, providing e-catalog and non-e-catalog drugs in collaboration with Procurement Policy Agency. The Ministry of the Health Republic of Indonesia also provides program drug, national buffer stocks for certain needs such as natural disasters, hajj, etc. Procurement Policy Agency has a role in providing

regulations related to drug procurement through e-catalogs and non-e-catalog as well as procurement consulting services for the Ministry of the Health Republic of Indonesia, Provincial, and District Health Offices.

With the innovations recommended in this study, a public drug management model was formulated for basic health services called the NADAGARI public drug management model in which novelty was a reciprocal relationship or connection between the District/City Health Service in a public drug relocation coordinated Provincial Health Office as shown in figure 2. This public drug management model is a correction or improvement to the model developed by Ministry of the Health Republic of Indonesia.

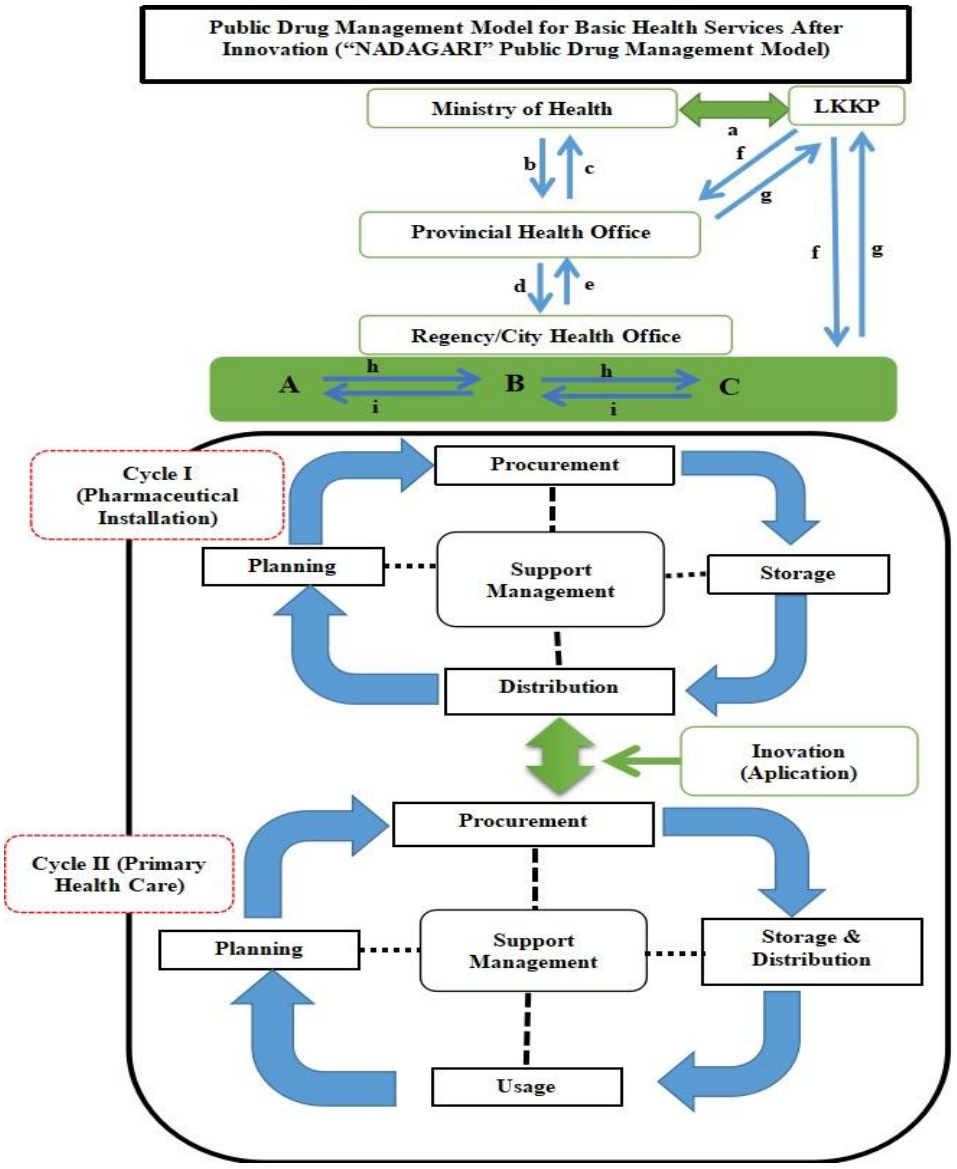

Figure No. 2: New Public Drug Management Model (NADAGARI Model)

Information:

a = Coordination of Ministry of Health Republic of Indonesia and LKPP for tendering of e-catalog and non-e-catalog drugs, b = Delivery of program drugs, special drugs for disasters/outbreaks, national buffer stock c = Reporting of total drug needs and procurement through e-monev, reporting availability, use, damaged expired, relocation through e logistic d = Delivery of buffer stock drugs, drug programs, drug relocation orders, e = Reporting drug needs and procurement through e-monev, reporting availability, use, broken expiration through e logistics, f = Guidelines for procurement of drugs, g = Consultation procurement of drugs, h = Relocation of drugs from District A to B and District B to C, i = Relocation of drugs from District B to A and District C to B.

CONCLUSION

First, innovations have been made in the management of public medicine for basic health services in health centers and referrals in hospitals. Innovations are carried out at every stage of public drug management starting from the planning, procurement, storage, and distribution and use of drugs. These innovations are stimulated by problems in each stage of public drug management and are carried out to find solutions to these problems and are linear. These innovations are process innovations and are initiated bottom-up and top-down and are also administrative innovations related to budget policy. Innovations that are developed independently in the management of public medicine in the Health Office of Kupang City, Belu District, and Malaka have not used information and communication technology interventions. Information technology-based innovations such as e-logistics, e-monev, e-catalogs were developed by the Ministry of the Health Republic of Indonesia and Government Goods and Services Procurement Policy Institute and used by the City of Kupang, Belu, and Malaka Health Offices. Information and communication technology-based innovations were carried out by S.K.Lerik Hospital by developing a hospital management information system application that features Dynamic Pharmacy Inventory (DPI) for drug management as a drug management information system while Mgr. Gabriel Manek, SVD Hospital, and RSUPP Betun Hospital have not used hospital management information system or other management information systems that are electronic but have made innovations in public drug management without the intervention of information technology. Secondly, the recommended model for public drug management innovation in Kupang City, Belu District, and Malaka District is in the form of information technology interventions (applications)

related to management information systems that can support decision making. This innovation model is web-based with information technology interventions that can be hybridized with the drug logistics application developed by the Indonesian Ministry of the Health Republic of Indonesia so that the management of public drug carried out at the pharmacy level of the health department will be connected to the management of public drug that occur in public health center into one unit public drug management for basic health services in the District/City so that the East Nusa Tenggara Provincial Health Office can find out the use and supply of drugs in each basic health service unit and pharmacy installation, the time of expiration of existing drugs so that there is an opportunity to relocate drugs between districts/cities in East Nusa Tenggara Province thereby increasing the efficiency of drug management. Third, through innovations in the form of information and communication technology interventions (applications), public drug management at the level of pharmaceutical installations at district/city health offices and health centers in the form of planning, procurement, storage, distribution, and use by each connected in real-time so that a new model of public drug management for basic health services will be formed where there is connectivity between districts/cities which allows for the relocation of drugs facilitated by the Provincial Government/East Nusa Tenggara Provincial Health Office.

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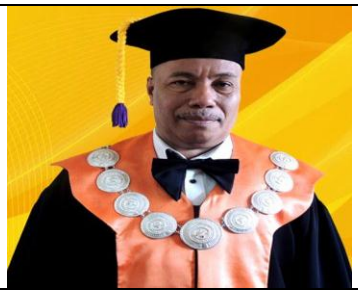	Frans Gana Faculty of Social and Political Sciences, Nusa Cendana University Adisucipto Penfui, Kupang, NTT, Indonesia
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