

# ANALYSIS OF ACUTE APPENDICITIS CLINICAL PATHWAYS IMPLEMENTATION IN ROYAL PRIMA MEDAN GENERAL HOSPITAL YEAR 2020

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## ABSTRACT

**Introduction:** Clinical pathway (CP) is a disease management tool used to reduce unnecessary variations in services, increase clinical outcomes, and control resources. Acute appendicitis is one cause of acute abdominal pain, where cases of appendix perforation range from 20-30% increasing to 32-72% at the age of more than 60. **Methods:** This research was conducted using mix method with case study design. Qualitative data were taken by interview and observation. Quantitative data were taken with a simple description from the acute appendicitis CP documentation in medical records and ICPAT (January - September 2020, n = 117). **Result:** According to the result of the research, the level of completeness for CP was 100% and form filling was 85%. **Conclusion:** ICPAT dimension 1 made sure that the form was the clinical pathway. The content and quality were good, and dimension 2 assesses the CP documentation process. The content is lacking and the quality is moderate, dimension 3 assesses the CP development process which content was good, and quality was moderate, and dimension 4 assesses the CP implementation process. The content was moderate, and the quality was good. Dimension 5 is to assess the maintenance of clinical pathways in which content was lacking and quality was moderate. Dimension 6 serves to assess the role of the organization that content was good and quality was moderate where the obstacles were due to lack of understanding and time constraints.

**Keywords:** Analysis of clinical pathways implementation, acute appendicitis, ICPAT

## INTRODUCTION

Health is a fundamental right of each individual, as stated in the WHO constitution. In realizing the right of individual health, health services must be able to place resources and organization efficiently with the advancement of the medical world (Romeyke T, 2012). Excellent quality health care depends on the correlation between the good structure or input, process, and output. Structures are an organization, management, finance, personnel, facilities, and infrastructure. Processes are all activities of health workers who interact with patients professionally. Meanwhile, the output is the final results or services that have been provided by health workers to patients (Arief and Dewi, 2017).

Clinical pathway (CP) is a disease management tool used to reduce unnecessary variations in services to improve clinical outcomes and also to

control the use of resources (financial). The CP document provides in detail every important stage of health care, for the majority of patients with specific clinical problems (diagnosis or procedures), as well as the expected results. (Djasri, 2013; Eka F, 2016).

The United States applies clinical pathways to almost 80% of all health services there. In Indonesia, the application of clinical pathways related to the application of INA-DRG (Indonesian Diagnosis Related Groups) is expected to increase the efficiency and quality of health services in hospitals. This document is also one of the requirements that must be met in the 2012 KARS version of the accreditation standard for hospitals. CP also plays a role in improving quality control and hospital costs, for example, such as shortening the length of stay, reducing the risk of recurrence, complications and patient

mortality, and overall hospital costs. (Eka F, 2016).

Based on the results of a study by Yasman (2012) regarding the benefits of clinical pathways, it was found that there was an increase in service, implementation of evidence-based practice, monitoring of service standards, more directed documentation, increased collaboration between divisions, improved risk management and provision of care patient (Yasman, 2012). As well as from a study conducted by comparing clinical pathway treatments and normal care performed by Kinsman et al., in 2010, the results showed a decrease in disease-related complications and an increase in documentation with clinical pathways (Kinsman et al., 2010).

Acute appendicitis is one of the most common causes of acute abdominal pain. Appendicitis can be found in both men and women with the risk of suffering from appendicitis in their lifetime reaching 7-8%. The highest incidence is reported in the age range of 20-30 years. The cases of appendix perforation in acute appendicitis range from 20-30% and increase by 32-72% at the age of more than 60 years. (Sjamsuhidajat, 2010; Omari et al., 2014).

Royal Prima Medan General Hospital is one of the hospitals accredited with B type hospital which serves public health both the general and BPJS patients and has implemented CP. One of them is acute appendicitis CP, which is the case of acute appendicitis patients at the Royal Prima Medan General Hospital each year continued to increase from 357 cases in 2018 and 447 cases in 2019. Therefore, it is necessary to do further studies regarding the implementation of CP to analyze the implementation system, monitoring, and evaluation of CP as a means of service quality control and hospital cost control.

## **METHODS**

This research was conducted using a mixed method with a case study design. Qualitative data were taken by interview

and observation to get more in-depth information about the implementation of the clinical pathway for acute appendicitis at Royal Prima Medan General Hospital. Quantitative data were taken with a simple description from the acute appendicitis CP documentation in medical records and the Integrated Clinical Pathway Assessment Tool (ICPAT). The population of this study were medical records with a diagnosis of appendicitis during the past 9 months and informants who were directly related to clinical pathways.

Quantitative samples were taken from all acute appendicitis medical records and selected by total sampling with the inclusion criteria, namely acute appendicitis CP used in Royal Prima Medan General Hospital, including medical records with acute appendicitis diagnosis from January 2020 to September 2020, with the exclusion criteria of missing, illegible and damaged patient medical records. The qualitative sample information that will be taken through interview are informants who are directly related to the clinical pathway consisting of Case Manager, Medical Services Committee, and Head Nurse of Inpatient Rooms with purposive sampling technique (n = 5).

The type of validation of research results was data sources triangulation. In quantitative data that taken descriptively through the documentation of acute appendicitis CP in medical records and ICPAT. ICPAT form was not tested for validity and reliability because it used a validated ICPAT form. This form is commonly used for assessing clinical pathways in the United Kingdom. The CP assessment consists of 6 dimensions which are Dimension 1 accessing the CP format, Dimension 2 accessing the CP documentation, Dimension 3 accessing the CP development, Dimension 4 accessing the CP implementation, Dimension 5 accessing the CP maintenance, and Dimension 6 accessing the organizational roles (Whittle, 2009).

The results of qualitative and quantitative research were triangulated by confirming respondents through interviews and observations of research subjects. The triangulation sources were carried out by processing and preparing data, re-reading the whole, and analyzing data obtained from sources and medical records so that conclusions could be drawn about the results of the action in the form of narrative or qualitative reports. Quantitative analysis was carried out by descriptive analysis of

the ICPAT checklist, and the data was processed using a computer program. Qualitative analysis was carried out by collecting data then the data that has been obtained was reduced by combining and grouping similar data into one written form according to their respective format with the stages of open coding, axial coding, themes and finally drawing conclusions and, or verification stage. (Ethics Test Number: 002/KEPK/UNPRI/VIII/2020)

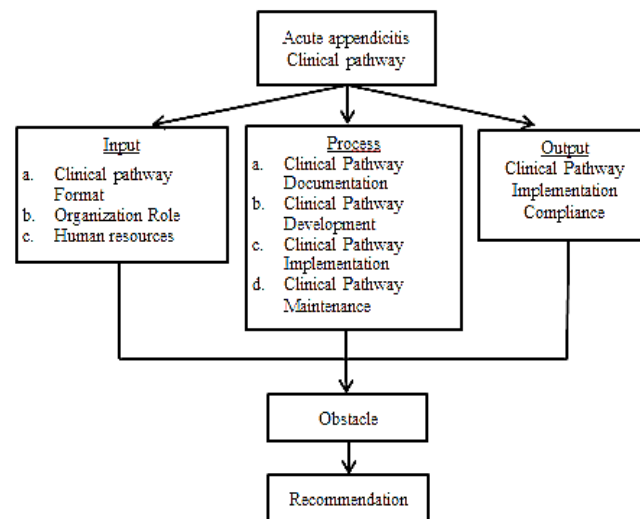


Figure 1. Research conceptual framework

**RESULT**  
**Hospital Profile**

Royal Prima Medan General Hospital is one of the types- B accredited hospitals that serve public health both the general public and the BPJS, which has implemented CP. One of them is acute appendicitis CP which is one of the biggest diseases that is often found in the past few months. Which is the case of acute appendicitis patients at Royal Prima Medan Hospital continues to increase every year from 357 cases in 2018 and 447 cases in 2019.

**ICPAT Evaluation Results**

The ICPAT evaluation result on acute appendicitis CP is shown in Figure 1 below. Based on the literature of Whittle et al

"Assessing the content and quality of pathways" (2008), the ICPAT assessment classification obtained, if the assessment results in a percentage of >75%, the clinical pathway form that assessed is in good criteria, 50-75% is included in moderate criteria, and <50% is in poor criteria (Whittle, 2009).

From the results of Figure 2, the assessment of dimension 1, content, and quality was good. Assessment on dimension 2, content was poor, and quality was moderate. Dimension 3, the content was in good criteria, and the quality was moderate. For dimension 4, the content was moderate, and the quality was good. In dimension 5, the content was poor, and the quality was moderate, while in dimension 6, the content was included in the good assessment, and

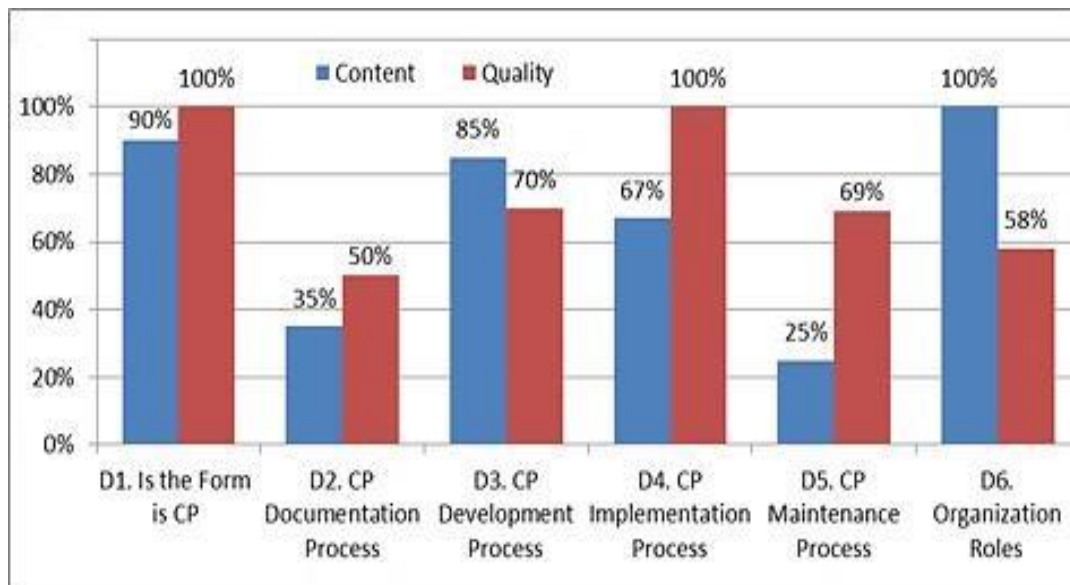
the quality was included in the moderate category.

**Input**

Based on the observations and interview results, there were 4 general surgeons at the Royal Prima Medan General Hospital. At the same time, the number of nurses focused on the 5th floor was 21

people, 4 male, and 17 female. Based on interviews conducted by the researcher related to clinical pathways, the coding results based on the nurse's understanding of the clinical pathway serve in Table 1.

The entire respondent stated that the clinical pathway is a guideline in clinical care services to determine the uniformity of service standards and reduce the time and treatment cost.



**Figure 2.** The ICPAT evaluation result

**Table 1.** Coding of Nurses' perspective Clinical Pathway Understanding

Variable	Method	n	Result	Conclusion
The clinical pathway definition	Interview	6	a. Clinical path b. Service guide c. Patient care guidelines	A clinical pathway is a guideline for clinical care services.
The function of a clinical pathway	Interview	6	a. Quality and cost control b. Focus more on handling the patient c. Reduce the risk of mishandling	The clinical pathway function is to establish uniform service standards as quality control, time and cost.

Based on the interviews, all inward staff contribute to patient services, this was supported by a statement from an interview with informant C that,

*"... who use CP are all parties involved in patient care."*

and from informant P's statement in the interview, *"... filling in is the doctor on duty and/or the case manager."*

Based on this statement, it is known who filled out the clinical pathway sheet.

**Table 2.** Number of Hours on Hospital Care for Floor 5b Inward in Royal Prima Medan General Hospital

<b>Effective Nursing Care Hours/Day</b>				
No	Category	Patient/day	Nursing hours	Total
1.	Minimal care	20	2	40
2.	Moderate care	12	3,08	36,96
3.	Heavy care	3	4,15	12,45
4.	Maximal care	0	6,16	0
Total		35	15,69	
Total number of care per day				89,41

**Table 3.** Number of Nursing Staff Working on Floor 5b Inward in Royal Prima Medan General Hospital

<b>A = Number of Nursing staff working</b>			
Number of nursing hours/ day		89,41	
=		=	
Number of hours working/ shift		7	
			13 person

**Table 4.** Number of Off Shift Nursing Staff on Floor 5b Inward in Royal Prima Medan General Hospital

<b>B = Number of Off Shift Nursing Staff (Loss Day)</b>			
Num. of off-shift/ wk/yr + Num. of leave days + Num. of holiday /yr			
		82 x 13	
		x A =	
Num. of effective workday/yr		8	
			= 4 person

**Table 5.** Non-Nursing Staff on Floor 5b Inward in Royal Prima Medan General Hospital

<b>C = Non-Nursing Personnel</b>	
$(A + B) \times 25\% = (13 + 4) \times 25\% = 4 \text{ person}$	

**Table 6.** Nursing Labor Need on Floor 5b Inward in Royal Prima Medan General Hospital

<b>Nursing Labor Need in Inward</b>		
A + B + C	= (13+4+4)	= 21Person
Inward Head		= 1Person
Number of Labor Needed		22 Person

The table above is an interpretation of the needs of nursing personnel based on the guidelines for calculating the needs of nurses according to the Directorate of Nursing Services Directorate General of Indonesian Medical Care Health Department. From the calculation of the table below, it was found that the need for nurses on the 5th floor of the Royal Prima Medan General Hospital numbered 22 people, while there were 21 nurses occupied.

### Process

Based on the results of interviews and observations, the acute appendicitis clinical pathway created in 2016 did not provide access to its patients to CP both for filling and developing variations also implementation. Following informant K's statement,

*"..cannot access, the clinical pathway restricted only for us, paramedic .."*

Based on this statement and observation of the CP form, the revision number had not been included. There was no input or review from the patient because patients did not have access to their CP. Besides, there was no individual staff in charge of being responsible for internal CP storage. This was supported by the statement that the content has not been fulfilled is that there is no individual staff responsible for maintaining CP, supported by a statement from informant K,

*"...still being saved at Medical Record Department at the moment. there is still nothing written who is responsible, the procedure just verbally being told."*

In addition, there was no training for current staff when there were any changes in the content of the CP and there was no training on the use of CP for the new staff involved, this was in accordance with the statement from informant K which stated,

*"... there, every year, usually at the beginning of the year or at the end of the year ..."*

Meanwhile, the quality aspects that had not been met, namely, the contents and documentation of clinical pathways had been regularly reviewed based on variations. This was based on the observation form in which the revision number had not been included and there was no input or review from the patient because the patient did not have access to their CP.

### Output

Based on medical record observations, compliance in attaching the CP form for acute appendicitis, there were 117 out of 117 medical records (100%) that were observed attaching the clinical pathway form for acute appendicitis and also from the statements of informant K and informant P's that,

*"...if the patient stays inward with diagnosed exactly same with the existing clinical pathway, and which is a single diagnosis, then the clinical pathway form will be put in the patient record status..."*

*"... will be given in the inward room.."*

Then, from the completeness of the filling in medical records from 117 medical records, there were 12 medical records (15%) that had not been filled in, for example, the time of entry, date of exit, ICD code, and the plan of the ward, this is based on direct observation of the contents of the CP in the medical records. Based on these results, the researchers coded the interview results regarding the obstacles in implementing the clinical pathway in Table 8 below.

**Table 7.** The Obstacle in Clinical Pathway Implementation

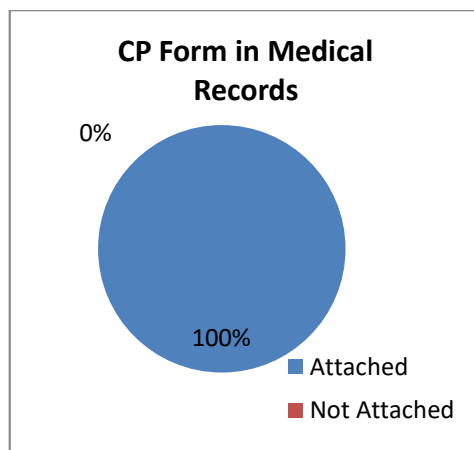
Variable	Method	Result	Conclusion
1. Attitude	Observation	a. Limited time b. Lack of cooperation in implementation form filling c. Lack of understanding of the clinical pathway	Lack of understanding of the importance of filling the clinical pathway.
2. Documentation	Observation	Less thorough in filling in details	Limited time makes it less thorough to fill the document.

This is also supported by the statement of one of the informants P who stated,

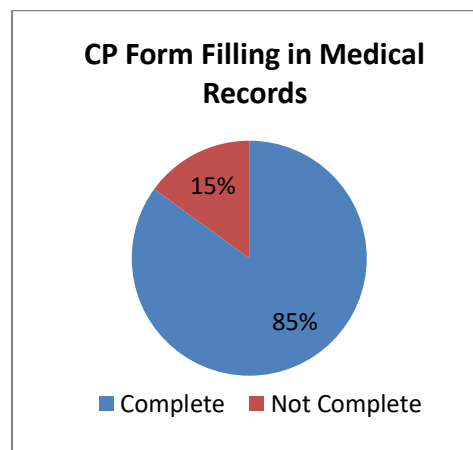
*“sometimes not discipline enough, because there are so many other works to do..but all the instruction already being done, but sometimes the documentation medical record with.. err.. clinical pathway missed one to two small things because quite busy..”*

The lack of understanding factor on the importance of filling the clinical

pathway, one of which is because the implementer is accustomed to delaying filling in the clinical pathway or not reminding each other or checking to fill it in the patient's medical record before the status returned, this results in incomplete filling of the clinical pathway plus with the business of the implementer such as case manager and the doctor in charge of the patients, so that the filling of the form is incomplete, even though the medical record staff will re-check once every quarter before it is given to the medical committee for auditing so that the CP form will be returned to the case manager to be filled back.



**Figure 3.** Compliance in attaching the CP form



**Figure 4.** Completeness in filling CP Form

## DISCUSSION

Based on the literature of Whittle et al "Assessing the content and quality of pathways" (2008), the ICPAT assessment classification is obtained, if the assessment results in a percentage of > 75%, the clinical pathway form that is assessed is include in the good criteria, 50-75% is include in the moderate criteria, and <50% are in the poor criteria (Whittle, 2009).

Based on the ICPAT assessment, dimension 1 obtained 100% content percentage and 100% quality. Based on these results, the content and quality are in a good category. Assessment of this dimension is to ascertain whether the form being assessed is clinical pathways (CP). Judging from the results obtained, it is true that the form being assessed is a right clinical pathway. To improve service quality, one way is to redesign the health service process by establishing a clinical pathway (Olsson, 2009). CP detailing what to do in certain clinical conditions and provides a management plan with appropriate service standards. CP also plays roles in improving quality control and hospital costs, such as shortening the length of stay, reducing the risk of recurrence, complications and patient mortality, and overall hospital costs (Eka F, 2016). Based on the previous data analysis, dimension 1 has met the good criteria.

Based on the ICPAT assessment, in dimension 2, the content percentage was 35% and the quality was 50%. Based on these results, the content falls into poor criteria and the quality is in the moderate category. Assessment of this dimension is to assess the CP documentation process. There are various CP document formats, depending on the type of disease or problem based on the agreement of the professionals. Generally, the CP format contains a table where the column consists of time. The row contains the results of observations, examinations, and actions. The filling out of the form consists of patient history data, physical examination, and screening studies

according to the agreement made (KARS, 2015; Croucher and Michelle, 2005). The CP document is also one of the requirements that must be met in the Hospital Accreditation Standard, where the CP document provides in detail every critical stage of health care, for most patients with specific diagnoses or clinical procedures, and with the expected results (Djasri, 2013; Eka F, 2016). It can be concluded that the documentation process is not detailed on the form which is considered affecting on communication among service staff, and also a lack of evidence related to the audit that will be carried out by the medical committee.

Based on the ICPAT assessment, in dimension 3, the content percentage was 85% and the quality was 70%. Based on these results, the 3rd dimension content included good criteria, and moderate quality. Assessment of this dimension is to assess the CP development process. Multidisciplinary professions involved in contributing to provide care can be in the form of nursing, medical, nutritional, and pharmaceutical care (KARS, 2015). The problem is that patients are not involved in the development of clinical pathways. The goal of the CP is the right person, the right instruction, the right place, at the right time doing the right thing with the right results, and all focusing on the patient experience. (Davis and Nicola, 2005). The evaluation carried out on CP is seen not only by the team that made it but also from the party receiving the care treatment, namely the patient (Widyanita, Arini and Dewi, 2016). Based on this, it can be concluded that the participation of patients in the development of clinical pathways will reduce the occurrence of problems such as contradiction over medical actions in the future.

Based on the ICPAT assessment, dimension 4 obtained 67% content percentage and 100% quality, where dimension 4 assessed the CP implementation process. In dimension 4, the content is moderate, and quality is good



evaluation criteria. The implementation of CP is related to clinical governance to improve and maintain the quality of service at an affordable cost as estimated. In contrast, in simple words, clinical governance is an efforts system to improve the quality of health care organization service systematically in an efficient and secure way. CP detailing what should be done in specific clinical conditions and provides a plan of action with service standards that considered in accordance with evidence-based medicine (Mnistry of Health, 2005). According to Mater, the first thing to do is to improve the quality of medical staff with knowledge related to CP before implementing a good clinical pathway implementation (Mater and Ibrahim, 2014). So it can be concluded that content still needs to be improved, especially by determining the allocation of resources to train staff in using the CP forms.

Based on the ICPAT assessment, in dimension 5, the percentage of content was 25%, and quality was 69%. Assessment of this dimension is to assess the maintenance of clinical pathway. Content is in poor criteria, and quality is moderate. From the results of the study, it is known that there is no written operational procedure standard about the individual responsible for maintaining CP. Hence, there is a need for staff responsible for maintaining CP. According to Davis, the identification of leaders and responsible teams is essential to forming a CP team that encourages and sustains changes (Davis and Nicola, 2005). Besides, new and current staff training when there is a change in the content or format of the CP in close intervals, especially during revisions or changes, only once a year. Davis also stated that there are 8 stages in the development of a clinical pathway, one of which is the need for regular reviews where there is a record of variation and whether the staff understands how to record the variation (Davis and Nicola, 2005). Apart from the quality side, there are no reviews based on the variations

that arise. Analysis of variations in ICP allows for an ongoing assessment of the process and results of guidelines or standards, thus providing an evaluation of the practices performed (Croucher and Michelle, 2005). From the study results, there is also no input from patients who change their practice because the patient has not been involved and related has not been updated code of clinical pathway variation used. Therefore, patient involvement and variation arising in the field need to be done and recorded so that the maintenance process can be increased.

Based on the ICPAT assessment, in dimension 6, the percentage of content was 100%. The quality was 58%, based on those results, the content is included in the good criteria, and the quality is in the moderate category. Dimension 6 serves to assess the role of the organization. Based on research, it is known that the management has done the CP socialization. However, the implementation of the clinical pathway is still considered less even the thing that they missed is small problems. This is because there has been no punishment or training conducted no more than once a year. There is also no commitment from each medical personnel who realize the importance of filling CP in detail. Hence the need for re-examination before submission to the quarterly audit section by the medical committee team. Devitra said that doctors should form a clinical commitment and leadership as one of the roles in organizing (Devitra, 2011). According to Widyanita et al, the main thing that can be done to enhance the organization's role is to strengthen the commitment of each officer involved (Widyanita, Arini, and Dewi, 2016). From this, it can be concluded that the role of the organization in the application of existing clinical pathways is supported by commitment with the staff continuously in the long terms

Furthermore, from the results of medical record observations, from 117 medical records with acute appendicitis diagnosis, all of them were attached with the

CP forms. Only in filling out the CP form, from 177 medical records, 12 medical records were not completely filled-in in details. Hanevi stated that CP documentation in detail, is an essential stage of health care, for most patients with some clinical issues (diagnosis or procedures), and with the expected results (Djasri, 2013). The Hospital Accreditation Committee stated that one of the effectiveness of CP documentation could save on the use of facilities, increase clinical outcomes, increase patient and practitioner satisfaction, and reduce treatment costs (KARS, 2015). Based on the above statement, it can be concluded that it is necessary to increase accuracy in the documentation process and implementation of clinical pathways to reduce medical negligence.

From the interviews with case managers and nurses, regarding data that is not written entirely, some informants stated that a large number of activities in the hospital and a large number of patients caused the filling of the forms to be imperfectly recorded in detail. Usually, they will be reminded by the medical record when they are discharged to fill it so sometimes it is missed because there is not one individual who is responsible for CP. Also, it is known that in the discussion of the need for nursing staff basically on the 5b floor there are 22 people, but currently, there are only 21 nurses. According to Devitra, human resources are the central pillar of success in applying the clinical pathways, therefore the need for ability and availability to manage existing potential (Devitra, 2011); Therefore, the management of existing resources, which is directly related to clinical pathways effectively, is needed.

## CONCLUSIONS

From the input aspect, the clinical pathway form assessed was acute appendicitis clinical pathway following the ICPAT assessment and met good criteria.

Facilities and infrastructure, including inpatient rooms and equipment, are available to function correctly and follow the standards set by the hospital. The number of general surgeons is 4 people, nursing staff, especially on the 5th floor, currently less than 1 person.

From the process aspect, the CP has been put into the medical record with a 100% rate. CP development has involved all staff related, but still not optimal yet. In the process of CP implementation, there are still obstacles such as a lack of awareness of the importance of filling the CP and the time limit for filling in the CP form thoroughly. No written notification of individual staff responsible for maintaining CP and evaluation of CP implementation is carried out once a year, and training is carried out simultaneously together with the evaluation meeting. From the output aspect, compliance filling complements acute appendicitis clinical pathway for, namely 85%.

In the socialization of the use of clinical pathways, routine training should be carried out for each staff associated with how-to fill the CP in turns several times a year, so that all staff involved understand and are familiar with the use of clinical pathways, especially if there are new staff changes or changes in CP forms. To improve compliance with the clinical pathway implementation, a staff member who is responsible for overseeing the implementation of the clinical pathway can be appointed officially on written documents so that it is valid as hospital operational standard procedure. As well as considerations in adding nurses' labor related to limited time to improve compliance with the implementation of clinical pathways.

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