

Optimizing Integrated Patient Progress Notes through the Application of Electronic Medical Record to Improve the Quality of Health Services: a Narrative Review

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Abstract.Background: The completeness and accuracy of Integrated Patient Progress Notes (CPPT) are crucial for effective communication among healthcare professionals and safeguarding patient safety. However, Indonesian hospitals face significant challenges in achieving complete and accurate CPPTs, leading to risks such as medication errors. Objective: This study aims to identify the practices and challenges of CPPT in Indonesia through a narrative literature review and explore best practices from hospitals in various countries, focusing on the implementation of integrated patient progress note systems and the application of the Plan-Do-Study-Act (PDSA) quality improvement model. Method: The methodology used in this study is a narrative review concerning the usage, effectiveness, and issues faced by hospitals in implementing CPPT. Result: The narrative review reveals several barriers to CPPT completeness in Indonesia, including insufficient management commitment, limited healthcare personnel capacity, and inadequate infrastructure. An Ishikawa diagram was used to categorize these barriers. To address these issues, the study conducted benchmarking with international best practices, highlighting innovations such as the digitalization of CPPTs through Electronic Medical Records (EMR). Using the PDSA model, the study proposes a structured approach to digitalizing the CPPT process. The "Plan" phase identified key areas for improvement, the "Do" phase involved pilot implementation of digital CPPTs, the "Study" phase assessed the outcomes, and the "Act" phase provided recommendations for broader implementation. Conclusion: This study concludes that the digitalization of CPPTs is essential for improving patient safety and healthcare quality in Indonesia, aligning with national health regulations and international best practices.

Keywords: Integrated Patient Progress Notes, Digitalization of Medical Records, Quality of Care

I.BACKGROUND

Effective communication is the foundation of patient safety and quality of care in hospitals. This is important due to the complexity of services such as outpatient, inpatient, emergency department, and medical record unit. The medical records unit plays a vital role in monitoring, managing, and processing medical information related to patient care[1]. In this context, the CPPT plays a central role as a communication tool that facilitates the exchange of information between members of the healthcare team. The CPPT records the outcomes of each healthcare worker's activities, creating a narrative that reflects the patient's overall care journey. The success of the CPPT in facilitating healthcare team communication and coordination depends on its completeness and accuracy. An incomplete CPPT can negatively impact the safety and quality of patient care, increasing the risk of medication errors such as the administration of incorrect drug doses or inappropriate medications. Research shows that patients with incomplete CPPT have a higher risk of experiencing medication errors, such as the administration of incorrect drug doses or inappropriate drug administration[2].

Therefore, it is important for hospitals to ensure that the CPPT is completed thoroughly and completely. The SOAP format used in CPPT documentation allows for a structured presentation of information, emphasizing aspects of Subject (history of patient complaints), Object (physical examination results), Assessment (diagnosis), and Planning (health care plan). Thus, CPPT is not only a clinical documentation tool, but also a tool that enables better understanding of the patient's condition and more effective treatment planning[3]. Completeness of CPPT is an indicator of the quality of hospital services. A complete medical record reflects the quality of medical services. Controlling the completeness of CPPT is important to improve the quality of services and achieve the vision and mission of the hospital. Improving service quality is the result of teamwork, supported by effective communication and accurate information management[4].

II.METHOD

The article search was conducted online from April to June 2024 using the indexing services Google Scholar, Scopus, as well as the PubMed and ScienceDirect databases, with no year restrictions, using the keywords "Catatan Perkembangan Pasien Terintegrasi AND Kualitas Layanan", "Integrated Patient Progress Notes AND hospital quality improvement". 12 journals related to the practices and challenges of CPPT in Indonesia and 8 journals related to best practices of hospitals in

various countries in implementing CPPT. The articles obtained were selected based on inclusion and exclusion criteria. The inclusion criteria for this literature review were articles in English or Indonesian, available in full-text format, and focused on the implementation of CPPT in improving service quality. The exclusion criterion was the implementation of CPPT in settings other than hospitals.

II.RESULTS AND DISCUSSION

Analysis of Causes and Effects of Integrated Patient Progress Notes Implementation problems in Indonesia

Indonesia implemented CPPT as part of the patient medical record. However, since its launch in 2012, there are still barriers and problems in filling out this integrated document across the country. Based on the literature review, it appears that the Integrated Patient Progress Record (CPPT) in Indonesia still faces several challenges that need to be addressed. These challenges are illustrated with a *Fishbone* or *Ishikawa* Diagram. An *Ishikawa* diagram can succinctly identify the causes and impacts of a problem to study potential solution[7]. Based on the literature review, the following causes of the problem were identified:

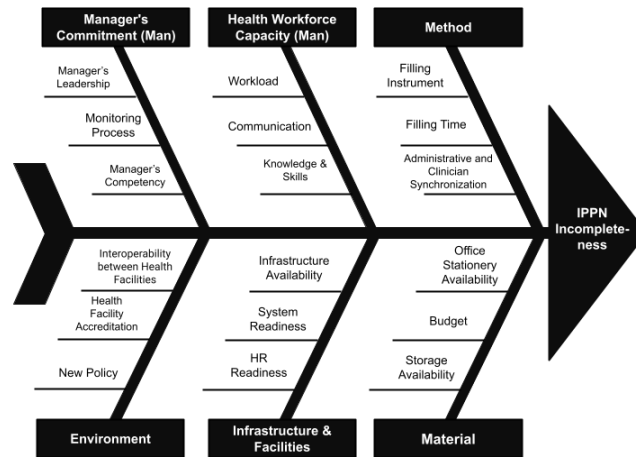


Figure 1. Ishikawa Diagram of CPPT Incompleteness in Indonesia

An *Ishikawa* diagram was used to identify the potential causes of the specific problem of incomplete Integrated Patient Progress Notes (CPPT) in Indonesia. The diagram includes several key categories that could potentially contribute to this problem, including:

Category	Description
Management Commitment	This includes factors such as commitment, manager competence, and monitoring processes. For example, if managers do not have sufficient competence or if the monitoring process is ineffective, this could be a cause of CPPT incompleteness[16]
Health Worker Capacity	This includes the workload, knowledge, and skills of the health worker. If health workers do not have sufficient knowledge or skills, or if they have a heavy workload, this could be a cause of

incomplete CPPT[11,12,13,14,15,17]

Standard Operating Procedure	This includes the instrument and the time taken to complete it. If the instruments used are inadequate or if the time taken to complete the CPPT is too long, this could be a cause of incomplete CPPTs[20,21]
External Environment	This includes factors such as new policies that may affect the process of recording CPPTs. For example, if there are changes in regulations or standards that health facilities must comply with, this could affect how CPPTs are recorded and managed[19]
Facilities and Infrastructure	This includes the physical infrastructure and technology used in the CPPT recording process. For example, if the infrastructure is inadequate or if the health facility does not have the right equipment to record and manage the CPPT, this could be a cause of CPPT incompleteness[18,19,20]
Materials	Includes all physical resources used in the CPPT recording process, such as forms, stationery, and others. If these materials are unavailable or inadequate, this could be a cause of CPPT incompleteness[19,21]

Table 1. Main Categories on the Ishikawa Diagram related to Potential Causes of CPPT Incompleteness

Benchmarking Best Practices in the Implementation of Integrated Patient Progress Notes in Various Countries

Improving CPPT in Indonesia is important to improve the quality of healthcare, patient safety, and medical record quality. To understand the challenges of integrating patient progress notes in hospitals, benchmarking was conducted. The purpose of this benchmarking is to explore and compare good practices and barriers faced by hospitals in various countries in implementing an integrated patient progress note system. It is known that the Integrated Patient Progress Note (CPPT) on Electronic Medical Records (EMR) has become a trend in various countries. The trend is implemented in many countries, both developed countries such as the United States [22,24,26,28] Canada [23,37] Denmark [6] and developing countries such as the Philippines [25]. Despite the shift to electronic systems, full integration is still a challenge.

From the *benchmarking* literature review above, it can be seen that in an effort to improve the efficiency and accuracy of CPPT documentation, various countries have implemented innovations such as the USA [22,24,26,28], Denmark [23,27], and the Philippines [25] have utilized digital documentation with additional features such as speech recognition and hashtags in the USA, automatic dictation in Denmark, and stakeholder collaboration in the Philippines.

Quality Improvement model for Optimizing Integrated Patient Progress Notes through the Implementation of Electronic Medical Record

In order to improve the quality of health services, the issue of incomplete integrated patient progress notes (CPPT) in hospital medical records in Indonesia is a major concern. CPPT incompleteness can affect various aspects, ranging from difficulties in tracking a patient's treatment history to communication problems between medical teams that can affect clinical decisions. This data incompleteness not only hinders the patient's healing process, but can also increase the risk of fatal medical errors.

Many countries around the world have taken significant steps towards digitizing medical records. They are not only using digital record systems, but also developing new technologies such as speech recognition and the use of tags (citations) to identify patients. These innovations not only facilitate access to patient data, but also improve the efficiency and accuracy of integrated patient progress notes (CPPT). Unlike Indonesia, which is still lagging behind in this aspect, many hospitals still rely on error-prone manual record-keeping systems.

Reviewing the conditions faced by hospitals in Indonesia that still use manual recording systems, it is necessary to intervene to be able to improve the quality of CPPT recording in medical records. A potential intervention plan is to encourage the digitization of integrated patient progress notes (CPPT) through the implementation of Electronic Medical Record (EMR). This is in accordance with the policy stipulated in the Peraturan Menteri Kesehatan No. 24 Tahun 2022 on Rekam Medis. The regulation regulates the use of EMR and encourages the digitization of medical records, which includes CPPT. Digitization of medical records is expected to overcome the problem of incomplete CPPT by making it easier to record, store, and access patient data electronically[4] .

In the context of quality improvement, the application of EMR as an intervention plan can be analyzed using various models, one of which is the Plan-Do-Study-Act model or PDSA for short[8] . The following are recommendations for the application of EMR in quality improvement with the PDSA model:

PDSA Model

Model for Improvement:

1. *What are you trying to accomplish?*

The main objective is to improve the quality and completeness of integrated patient progress notes (CPPT) in hospital medical records in Indonesia^[5].

2. *How will you know a change is an improvement?*

Changes can be considered an improvement if there is an improvement in the quality and completeness of the CPPT. This can be measured through monitoring and evaluation of the use of the EMR system, including the level of completeness of the CPPT. In addition, improvements can also be seen from the efficiency and accuracy in recording, storing, and accessing patient data^[5].

3. *What change can you make that will result in improvement?*

Some changes that can be made include developing or selecting an EMR system that

suits the needs of the hospital and patients, training the medical team and staff regarding the use of the EMR system, and implementing the EMR system in stages. In addition, improvements and adjustments to the EMR system based on the results of the analysis, the preparation of standard operating procedures (SOPs) for the use of the EMR system, and continuous development and improvement of the EMR system can also result in improvements^[5].

Planning The use of Electronic Medical Records (EMR) can change the way healthcare workers work. Acceptance of EMR is variable and can lead to unexpected outcomes. Planning and optimizing EMR should consider human behavior factors and change management strategies to support health workers in adopting this new documentation method. So EMR implementation can start with planning (Plan) which includes^[5] :

- 1) Identify technology needs,
- 2) HR Training, and
- 3) Setting usage standards, to review the efficiency and accuracy of recording, storing, and accessing patient data.

Doing The next step is execution (Do) where EMR is applied on a small scale for trial. Trained health workers and experts need to be involved to provide ongoing support. Training is conducted in small groups, both in-person and online, and includes demonstrations of EMR recording to prompt questions during the EMR trial^[5].

Studying After the experiment, monitoring and evaluation (Study) was conducted regarding the effectiveness of EMR in overcoming the problem of incomplete integrated patient progress notes (CPPT). The results of the evaluation can also be a benchmarking and operational standard for future implementation^[5].

Acting After evaluation, adjustments (Act) are made based on the findings to improve the system before widespread implementation. Adjustments include training other units and drafting SOPs for EMR use to ensure consistency and completeness of CPPT. After standardization, the EMR system is developed and improved continuously with the PDSA scheme^[5].

Table 2. Application of EMR in quality improvement with PDSA model

The implementation of EMR improves the quality standards of hospital services with fast and accurate access to patient information, improving the quality of diagnosis and therapy, and coordination of medical team care. Research shows that EMR improves work efficiency, service quality, user satisfaction, patient case management, and collaboration between health professionals[9] . EMR also helps reduce waiting time for services, continuity of care, avoid duplication of examinations, and improve quality of care[10] . All of these factors significantly contribute to improving the quality of health services in accordance with applicable standards and regulations[4].

III. CONCLUSIONS AND SUGGESTIONS

The Integrated Patient Progress Record (CPPT) is an important instrument in the documentation of patient care in hospitals and an effective tool to improve the quality of service and hospital quality, resulting in improved patient health. Based on the literature review, incomplete CPPT filling can affect the quality process of hospital services, in this case the intervention provided is to switch to EMR, although the application of EMR is still full of challenges. The use of EMR in Indonesia can be said to have started running, although many parties suspect that electronic medical records do not have a clear legal umbrella, especially with regard to ensuring that the stored data is protected against elements of privacy, confidentiality and information security, but in general based on benchmarking from other countries that have switched to implementing EMR, it is stated that it is effective in saving time so that health workers can be more optimal in health services and improving the quality of health services to patients.

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