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THE EFFECT OF IMPLEMENTING A CLINICAL PATHWAY FOR TYPHOID FEVER ON QUALITY AND COST CONTROL AT MITRA MEDIKA PREMIERE HOSPITAL, MEDAN

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Abstract

The implementation of Clinical Pathways (CP) is a key strategy to improve healthcare quality while controlling costs through standardized and evidence-based services. Typhoid fever is one of the most common inpatient diagnoses, requiring effective and efficient clinical management. Mitra Medika Premiere Hospital Medan has implemented a Typhoid Fever Clinical Pathway as part of its quality and cost control efforts. This study aims to analyze the implementation of the Typhoid Fever Clinical Pathway as a quality and cost control instrument and to identify factors influencing its implementation. This study employed a qualitative approach, with data collected through interviews, observations, and document reviews involving healthcare professionals engaged in CP implementation. The findings indicate that healthcare providers demonstrate good knowledge and positive attitudes toward CP and understand its benefits in improving service organization and efficiency. CP dissemination has been conducted across units and is supported by adequate human resources and medical facilities. However, the implementation has not been fully optimal due to challenges such as inconsistent documentation compliance, high workload, multiple patient diagnoses, comorbidities, and suboptimal inter-unit coordination and evaluation mechanisms. In conclusion, the hospital has adequate resources and infrastructure to support the implementation of the Typhoid Fever Clinical Pathway. However, strengthening supervision, regular training, and improving evaluation mechanisms are necessary to optimize its implementation and achieve quality improvement and cost efficiency.

Keyword : Clinical Pathway, Typhoid Fever, Quality Control, Cost Control, Hospital

Introduction

The implementation of Clinical Pathways (CP) has become a key strategy in healthcare reform across both developed and developing countries. A clinical pathway is a structured, evidence-based multidisciplinary care plan designed to standardize the management of specific clinical conditions. Its application has been shown to reduce variations in clinical practice, shorten the length of hospital stay, improve clinical outcomes, and lower healthcare costs without compromising quality of care (Kinsman et al., 2020; Panella et al., 2021). In addition, CP facilitates effective communication among healthcare professionals and clarifies roles within the care team, thereby reducing the risk of medical errors and improving both patient and provider satisfaction (Rotter et al., 2020).

Global health organizations, including the World Health Organization, strongly advocate for the adoption of clinical pathways as part of broader strategies to enhance healthcare quality and efficiency. The integration of CP into routine healthcare delivery supports standardized, equitable, and patient-centered services. Furthermore, CP plays a significant role in case-based payment systems such as Diagnosis Related Groups, enabling better prediction of resource utilization and cost per episode of

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care (WHO, 2021; Busse et al., 2022). Thus, clinical pathways serve not only as quality assurance tools but also as effective instruments for cost control in increasingly constrained healthcare systems.

Evidence from various countries indicates that the successful implementation of clinical pathways is influenced by institutional commitment, continuous training of healthcare professionals, and integration with hospital information systems (Van Herck et al., 2020; Schrijvers et al., 2022). In well-established healthcare systems, CP has become a cornerstone of cost containment while maintaining patient safety and satisfaction. However, challenges remain, particularly in developing countries, where limited resources, inconsistent adherence, and lack of standardized protocols hinder optimal implementation (Abdelkader et al., 2023) .

Within the ASEAN region, healthcare systems are facing a dual burden of disease, characterized by the rise of non-communicable diseases alongside persistent infectious diseases. This situation necessitates more efficient healthcare delivery, especially under constrained financing mechanisms. Clinical pathways offer a strategic solution by promoting standardized, evidence-based care that minimizes unnecessary variation and enhances cost efficiency (Teo et al., 2023). Several countries in the region have demonstrated positive outcomes from CP implementation, including reduced hospital readmissions and shorter lengths of stay (Lim et al., 2023).

In Indonesia, the adoption of clinical pathways has been gradually expanding, particularly in large referral and teaching hospitals. Under the national health insurance system, CP is increasingly recognized as a critical tool to align clinical practice with reimbursement mechanisms such as INA-CBGs (Kementerian Kesehatan Republik Indonesia, 2022). Several hospitals have reported improved claim accuracy, reduced discrepancies, and better adherence to clinical protocols following CP integration (Prasetyo et al., 2023). Despite these advancements, challenges such as limited training, inconsistent compliance, and inadequate monitoring systems continue to affect the effectiveness of CP implementation.

Beyond financial considerations, clinical pathways also contribute to strengthening clinical governance and improving the quality of medical education in teaching hospitals. By providing structured and evidence-based care processes, CP enhances consistency in clinical decision-making and supports routine clinical audits, fostering a culture of continuous quality improvemen (Putri & Wibowo, 2021; Rahman et al., 2024) .

RS Mitra Medika Premiere is a leading private hospital in Medan that provides comprehensive healthcare services, including inpatient, outpatient, and emergency care across multiple specialties. As part of its commitment to improving service quality and operational efficiency, the hospital has implemented Clinical Pathways for various diagnoses, including infectious diseases and elective surgical procedures. One of the most prominent conditions managed is Typhoid Fever, which represents a significant proportion of inpatient cases.

Hospital data from July 2024 to June 2025 indicate that Typhoid Fever is the most frequent inpatient diagnosis, with 432 cases annually and an average length of stay of 4–5 days. Given its high incidence, potential complications, and associated healthcare costs, optimizing the implementation of the Typhoid Fever Clinical Pathway is crucial. Effective CP implementation can improve efficiency, prevent unnecessary interventions, accelerate patient recovery, and reduce readmission rates (Wijayanti et al., 2023).

Despite the availability of CP, several challenges persist in its implementation at the hospital, including inconsistent adherence to standardized protocols, varying levels of understanding among healthcare professionals, and limited routine training. These issues may reduce the effectiveness of CP in achieving its intended outcomes in quality and cost control (Sari et al., 2023).

Therefore, this study aims to evaluate the implementation of the Typhoid Fever Clinical Pathway as an instrument for quality and cost control at RS Mitra Medika Premiere Medan. By identifying existing gaps and influencing factors, this research is expected to provide evidence-based

recommendations to optimize CP implementation and strengthen healthcare service delivery in hospital settings.

Methods

This study used a qualitative design to explore the implementation of the Clinical Pathway (CP) for Typhoid Fever in quality and cost control at RS Mitra Medika Premiere. The study was conducted in inpatient units and related management departments, starting from January 2025.

A total of nine informants were selected using purposive sampling and triangulation, consisting of one key informant (Head of Medical Services), five main informants (two internists, two pediatricians, and the head of nursing), and three triangulation informants (case manager, casemix officer, and head of medical records). Data collection was carried out through in-depth interviews, direct observation, and document review. Interviews used semi-structured guidelines, were audio-recorded, and transcribed verbatim.

Data were analyzed using the Miles and Huberman model, including data reduction, data display, and conclusion drawing (Miles et al., 2021). Trustworthiness was ensured through triangulation and the criteria of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 2021).

Result

1. Characteristics of Informants.

Table 1. Characteristics of Informants

Category of Informants	Position/Profession	Number	Main Role
Key Informant	Head of Medical Services	1	Responsible for policy, quality control, and overall CP implementation
Main Informants	Internal Medicine Specialists	2	Implement and evaluate CP for adult typhoid fever patients
	Pediatricians	2	Implement CP for pediatric patients and ensure protocol adherence
	Head of Nursing	1	Coordinate nursing care and ensure compliance with CP
Triangulation Informants	Case Manager	1	Monitor CP compliance and coordinate across healthcare teams
	Casemix Officer	1	Verify cost alignment and evaluate financial efficiency
	Head of Medical Records	1	Ensure completeness and accuracy of CP documentation

A total of nine informants participated in this study, consisting of one key informant, five main informants, and three triangulation informants. The key informant was the Head of Medical Services. The main informants included two internal medicine specialists, two pediatricians, and the head of nursing. Triangulation informants consisted of a case manager, a casemix officer, and the head of medical records. All informants were directly involved in the implementation, monitoring, and evaluation of the Clinical Pathway (CP) for Typhoid Fever.

2. Knowledge and Attitudes toward Clinical Pathway.

Most informants demonstrated good knowledge of the Clinical Pathway, recognizing it as a standardized guideline for managing typhoid fever, including diagnosis, treatment, monitoring, and patient education. The CP was widely perceived as an important tool for improving service quality and cost efficiency.

In terms of attitudes, the majority of informants expressed positive views toward CP implementation. However, several informants reported that its implementation was not yet optimal, mainly due to low compliance among healthcare workers. Some physicians also expressed critical perspectives, stating that while CP is beneficial, its practical application does not always align with clinical realities.

3. Communication and Coordination.

The implementation of CP was supported by formal policies, including director decrees and standard operating procedures. However, dissemination of these policies was not evenly received by all healthcare staff, leading to variations in understanding and practice.

Communication and coordination among healthcare professionals were reported to be suboptimal. Informants highlighted that miscommunication frequently occurred, particularly during shift transitions, resulting in inconsistent documentation and delays in clinical decision-making. Although coordination mechanisms existed, they were often not implemented effectively or consistently across units.

4. Resources and Facilities.

Overall, human resources and hospital facilities were considered adequate to support CP implementation. The availability of medical personnel, nursing staff, and supporting services such as laboratory, radiology, and pharmacy was sufficient.

Despite this, challenges were identified in the documentation system. Although CP forms and medical records were available, compliance with documentation remained inconsistent. In addition, the integration of information systems across units was not fully optimized, which hindered effective monitoring and evaluation.

5. Barriers in Clinical Pathway Implementation.

Several barriers to CP implementation were identified from both clinical and managerial perspectives. Clinically, patients often presented with non-single diagnoses, comorbidities, or co-infections, requiring additional diagnostic and therapeutic interventions outside the standard CP. These conditions frequently led to deviations from the established pathway.

From a managerial perspective, differences in viewpoints between healthcare providers, hospital management, and payors contributed to implementation challenges. Physicians tended to prioritize clinical flexibility, while management emphasized adherence to CP for quality and cost control. Furthermore, CP was sometimes perceived as rigid, limiting its applicability in complex cases.

Low compliance in CP documentation was another major issue. Incomplete and inconsistent recording of CP forms hindered monitoring and evaluation processes. Limited training and lack of structured deviation guidelines further contributed to these challenges.

6. Evaluation of Clinical Pathway Implementation.

The evaluation results indicated that CP had not been fully effective as a tool for quality control and cost efficiency. Although CP provided a structured framework for patient care, frequent deviations reduced its overall effectiveness.

The length of hospital stays and clinical outcomes varied depending on patient conditions, particularly in cases involving comorbidities or multiple infections. While CP had the potential to improve outcomes, its impact was not consistently observed due to variations in implementation.

In terms of cost efficiency, CP contributed to cost control in standard cases. However, additional diagnostic procedures and treatments outside the CP often resulted in higher actual costs, reducing the expected efficiency.

7. Variations in Clinical Cases.

Variations in patient conditions were a significant factor influencing CP implementation. Patients with non-single diagnoses, comorbidities, or multi-infections often required modifications to the standard CP.

Healthcare providers adjusted the clinical pathway based on patient needs, while still attempting to document deviations. However, these variations frequently affected compliance with CP documentation and reduced consistency in service delivery.

Data from case management, casemix, and medical records indicated that such variations also contributed to increased healthcare costs and posed challenges in maintaining standardized care. These findings highlight the need for more flexible CP guidelines that can accommodate complex clinical conditions while maintaining quality and efficiency.

Discussion

The findings of this study indicate that the implementation of the Clinical Pathway (CP) for Typhoid Fever at RS Mitra Medika Premiere Medan has not yet achieved optimal effectiveness, despite adequate knowledge among healthcare providers and sufficient resource availability. Several key factors influencing implementation were identified, including knowledge and attitudes, communication and coordination, resource availability, barriers, and case variations.

In terms of knowledge and attitudes, most informants demonstrated a good understanding of CP as a standardized clinical guideline aimed at improving quality of care and cost efficiency. This finding aligns with previous studies showing that adequate knowledge among healthcare providers is a fundamental prerequisite for successful CP implementation (Kinsman et al., 2022; Rotter et al., 2023). However, although attitudes were generally positive, compliance in practice remained suboptimal. This gap between knowledge and practice reflects a common issue in healthcare systems, where awareness does not necessarily translate into adherence due to contextual and systemic barriers (World Health Organization, 2023).

Communication and coordination emerged as critical challenges in CP implementation. Although formal policies such as director decrees and standard operating procedures were in place, their dissemination was not uniformly effective. Inconsistent communication, particularly during shift transitions, contributed to incomplete documentation and fragmented care processes. Similar findings have been reported in other studies, where ineffective interprofessional communication was identified as a major barrier to integrated care pathways (Allen et al., 2022; Reeves et al., 2023). Effective coordination across disciplines is essential for ensuring continuity of care and adherence to standardized protocols.

Regarding resources and facilities, this study found that human resources and infrastructure were generally adequate. This suggests that the challenges in CP implementation are not primarily due to

resource constraints but rather to organizational and behavioral factors. Previous research has also highlighted that the presence of sufficient resources does not guarantee effective implementation without strong governance, monitoring systems, and staff engagement (OECD, 2022).

The study identified several barriers that significantly hinder CP implementation. From a clinical perspective, the presence of non-single diagnoses, comorbidities, and co-infections required deviations from standard CP protocols. These findings are consistent with evidence suggesting that standardized pathways often face limitations when applied to complex patient conditions, particularly in infectious diseases where variability is high (Campbell et al., 2022). From a managerial perspective, differences in viewpoints between clinicians, hospital management, and payors created additional challenges. Clinicians tended to prioritize individualized patient care, while management emphasized adherence to CP for quality and cost control. This tension has been widely documented in the literature as a key challenge in implementing standardized care models (Porter & Lee, 2022).

Another major issue identified was low compliance with CP documentation. Incomplete and inconsistent recording limited the ability to monitor and evaluate CP effectiveness. Documentation plays a crucial role in ensuring accountability, quality assurance, and data-driven decision-making (Joint Commission International, 2023). The lack of structured deviation guidelines and limited training further exacerbated this issue, indicating the need for continuous capacity building and system strengthening.

The evaluation findings revealed that CP has not yet functioned effectively as a tool for quality control and cost efficiency. Although CP contributed to more structured care, frequent deviations reduced its impact. In terms of clinical outcomes, variability in patient conditions such as comorbidities and multi-infections affected the consistency of outcomes and length of stay. These findings are in line with previous studies indicating that the effectiveness of CP is highly dependent on patient case mix and adherence to protocols (Panella et al., 2022).

From a cost perspective, CP showed potential in reducing costs for standard cases; however, additional diagnostic and therapeutic interventions outside the CP led to increased overall costs. This finding supports previous research indicating that cost efficiency through CP can only be achieved when deviations are minimized and well-managed (Busse et al., 2022). The involvement of payors and alignment of reimbursement systems are also critical factors influencing financial outcomes.

Variations in clinical cases were identified as a major factor affecting CP implementation. Patients with non-single diagnoses, comorbidities, and multi-infections required modifications to the standard CP, which often reduced adherence and consistency. These findings highlight the need for more flexible CP designs that incorporate deviation pathways and adaptive protocols. Recent literature emphasizes that modern clinical pathways should be dynamic and patient-centered, allowing for adjustments while maintaining core standards of care (European Pathway Association, 2023).

Overall, this study underscores that the challenges in CP implementation are multifactorial, involving clinical complexity, organizational dynamics, and system-level factors. To improve effectiveness, several strategies are needed, including the development of clear deviation guidelines, strengthening interprofessional communication, improving documentation systems, and providing continuous training for healthcare providers. In addition, harmonization between clinical practice, management policies, and payor systems is essential to ensure that CP can function as an effective tool for both quality improvement and cost control

Conclusion

The implementation of the Clinical Pathway (CP) for Typhoid Fever at RS Mitra Medika Premiere Medan has not yet achieved optimal effectiveness as a tool for quality control and cost efficiency. Although healthcare providers demonstrated good knowledge and generally positive attitudes toward CP, its application in clinical practice remains inconsistent.

Key challenges identified include suboptimal communication and coordination across healthcare professionals, low compliance with documentation, and the absence of structured deviation guidelines. In addition, variations in patient conditions, such as non-single diagnoses, comorbidities, and co-infections, frequently require modifications to the standard CP, leading to deviations that affect both service quality and cost efficiency.

Despite adequate human resources and supporting facilities, organizational and system-related factors play a more significant role in limiting effective implementation. Therefore, strengthening interprofessional coordination, improving documentation systems, developing clear deviation guidelines, and providing continuous training for healthcare providers are essential to enhance CP implementation.

Overall, the Clinical Pathway has strong potential as a strategic tool to improve healthcare quality and efficiency; however, its success depends on better alignment between clinical practice, management policies, and healthcare financing systems.

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