International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 09 Issue 04 April 2026
DOI: 10.47191/ijcsrr/V9-i4-10, Impact Factor: 8.048
IJCSRR @ 2026
www.ijcsrr.org

Improving Inter-Hospital Transfer Documentation Through Standardisation and Accountability: A Quality Improvement Study in a Resource-Limited Sri Lankan Hospital

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ABSTRACT

Background: Incomplete transfer documentation contributes to communication failures, delayed clinical decision-making, and increased patient safety risks during inter-hospital transfers. These risks are amplified in resource-limited settings due to system inefficiencies, high workload, and lack of standardisation.[1–3]

Objective: To improve the completeness, accuracy, and accountability of inter-hospital transfer documentation through structured system-level interventions.

Methods: A single-centre quality improvement study using Plan–Do–Study–Act (PDSA) cycles was conducted at Base Hospital Kinniya, Sri Lanka from January to June 2019 for a period of 6 months. A retrospective audit of 436 inter-hospital transfer forms was conducted using predefined criteria derived from Ministry of Health standards and stakeholder consensus. Two PDSA cycles were implemented: the first introduced staff training and a structured documentation seal; the second introduced a "probable diagnosis" field and a checking officer system. Key indicators included documentation of diagnosis, reason for transfer, vital signs, treatment given, and time of transfer. Descriptive statistics were used to analyse changes in documentation completeness.

Results: Baseline assessment demonstrated major deficiencies in documentation, including diagnosis (61.5%), treatment given (42.2%), time of transfer (14.7%), and oxygen saturation (26.6%). Following PDSA cycle 1, improvements were observed across all parameters. After PDSA cycle 2, near-complete compliance was achieved in most domains, including diagnosis (99.1%), heart rate (100%), blood pressure (100%), and time of transfer (98.6%). Treatment documentation improved to 94.9%, and oxygen saturation to 98.6%. Documentation verification reached 100% following introduction of a checking officer.

Conclusion: System-level interventions incorporating standardisation, training, and accountability significantly improved transfer documentation completeness. This low-cost, scalable approach is potentially applicable to similar resource-limited healthcare settings.

KEYWORDS: Audit, PDSA cycle, Patient Safety, Quality Improvement.

KEY MESSAGES

What is already known on this topic

Inter-hospital transfers are high-risk processes, and failures in communication and documentation are major contributors to adverse events and delays in care.

What this study adds

A combination of structured documentation, contextual adaptation, and accountability mechanisms can achieve near-complete compliance in transfer documentation in a resource-limited setting.

How this study might affect research, practice or policy

Low-cost system redesign focusing on standardisation and accountability can significantly improve patient safety and continuity of care and is scalable across similar healthcare systems.

PROBLEM

Inter-hospital transfer is a critical component of healthcare delivery, enabling patients to access specialised services that are not available at the referring facility. However, at Base Hospital Kinniya, transfer processes were frequently compromised by incomplete

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and inconsistent documentation. Key clinical information—including diagnosis, vital signs, treatment provided, and time of transfer—was often missing or inadequately recorded.

These deficiencies created significant risks to patient safety by impairing clinical decision-making at receiving institutions, delaying initiation of appropriate management, and increasing the likelihood of errors during care transitions. In addition, incomplete documentation posed medico-legal concerns and reflected broader system inefficiencies. The persistence of these gaps suggested that the problem was not solely related to individual performance, but rather to limitations in the design and structure of the transfer documentation system.

BACKGROUND

Inter-hospital transfer represents a high-risk transition in patient care, involving the movement of patients across organisational, professional, and informational boundaries. Effective communication during this process is essential to ensure continuity of care, as clinical decisions at the receiving facility depend heavily on the accuracy and completeness of transferred information. Failures in communication and documentation during transfers have been consistently associated with delays in treatment, inappropriate clinical management, and increased morbidity and mortality.[1–3]

The World Health Organization identifies communication breakdowns during patient handovers as a major global patient safety concern, emphasising that incomplete or unclear information transfer can result in significant disruptions to care continuity and potential patient harm.[4] These challenges are further amplified in complex healthcare systems, where multiple providers and teams are involved in patient management across different settings.

Evidence indicates that both inter-hospital and intra-hospital transfers are associated with substantial risk. Adverse events have been reported in a significant proportion of transfers, with communication failures contributing to a large share of these incidents. Deficiencies in transfer processes—including lack of standardised protocols, incomplete documentation, and absence of structured communication tools—have been identified as key underlying factors.

In resource-limited settings, these risks are often exacerbated by high patient volumes, staffing constraints, and limited system-level support. Studies from low- and middle-income countries have demonstrated that the absence of structured transfer processes and inadequate training contribute to unsafe transfers and compromised patient outcomes. Conversely, the implementation of standardised documentation tools, checklists, and structured communication frameworks has been shown to improve the completeness of information transfer, enhance patient safety, and increase efficiency of care delivery.

Standardisation of documentation, particularly through the use of structured formats and checklists, reduces variability and supports consistent capture of essential clinical information. However, emerging evidence suggests that standardisation alone may not be sufficient to achieve sustained improvements. Additional system-level strategies—such as workflow redesign, staff training, and accountability mechanisms—are often required to address human factors and ensure reliable implementation in routine clinical practice

RATIONALE

Baseline findings suggest that deficiencies in transfer documentation are primarily driven by system design limitations rather than individual clinician performance. The absence of structured prompts, incomplete forms and lack of verification mechanisms contribute to inconsistent documentation practices.

Standardisation through structured tools acts as a cognitive aid, reducing reliance on memory and supporting consistent documentation of essential clinical information.^8 However, evidence indicates that standardisation alone is insufficient to achieve high reliability, as human factors such as workload and time pressure continue to influence behaviour.^10

The introduction of accountability mechanisms provides an additional layer of system reliability. The implementation of a checking officer introduces redundancy, ensuring verification of documentation prior to transfer. This approach aligns with principles of high-reliability systems, where layered safeguards mitigate the impact of human error.

The addition of a “probable diagnosis” field represents an important contextual adaptation. In emergency settings, definitive diagnosis may not be immediately available; however, absence of any diagnostic information significantly impairs clinical decision-making. Enabling documentation of a working diagnosis improves information transfer while maintaining feasibility in real-world settings.

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This study aimed to improve the completeness, accuracy, and accountability of inter-hospital transfer documentation through structured system-level interventions in a resource-limited hospital setting.

METHODS

Context

This was a single-centre quality improvement study conducted in accordance with SQUIRE 2.0 reporting guidelines using iterative Plan–Do–Study–Act (PDSA) cycles. This study was conducted at Base Hospital Kinniya, a secondary care institution in the Eastern Province of Sri Lanka. The hospital serves a large population in a resource-limited setting characterised by high patient load, limited staffing, and constrained infrastructure. These contextual factors contributed to variability in documentation practices and informed the design of the intervention. Baseline data were collected from January to March 2019. PDSA cycle 1 was conducted from March to May 2019, followed by PDSA cycle 2 from May to June 2019.

Intervention

The intervention consisted of a structured system redesign aimed at improving transfer documentation completeness. It included staff training, introduction of a documentation seal incorporating missing parameters, and later the addition of a checking officer system and expanded documentation fields.

Study of the Intervention

The impact of the intervention was assessed through comparison of baseline data with post-intervention data following each PDSA cycle. Changes in documentation completeness were analysed in relation to specific intervention components, allowing evaluation of their effectiveness.

Measures

Process measures included documentation completeness of predefined criteria such as diagnosis, vital signs, and treatment. Overall completeness of transfer documentation was defined as the proportion of transfer forms in which all required parameters were documented. Outcome measures included overall completeness and reliability of transfer documentation. No direct patient outcome measures were included.

The audit criteria and expected standards for transfer documentation are summarised in Table 1.

Table 1. Audit criteria and expected standards for transfer documentation

Indicator	Description	Standard (%)
Patient identification	Name, age, BHT completeness	100
Diagnosis	Documented diagnosis or probable diagnosis	100
Reason for transfer	Clear indication for transfer	100
Heart rate	Recorded prior to transfer	≥95
Blood pressure	Recorded prior to transfer	≥95
Oxygen saturation	Recorded prior to transfer	≥95
Treatment given	Pre-transfer management documented	≥95
Time of transfer	Time documented clearly	100
Receiving unit	Destination documented	100
Investigation reports	Relevant reports attached	≥95
Authorisation	Signed by responsible officer	100

Data Collection Instrument

All consecutive inter-hospital transfer forms during the study periods were included. A structured checklist was developed based on Ministry of Health transfer guidelines and stakeholder input. Each parameter was recorded as present or absent, allowing calculation

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of compliance percentages. Data were collected by trained medical officers using a standardised checklist. Each transfer form was reviewed independently, and discrepancies were resolved through discussion. There were no missing data in the dataset, as all variables were recorded as either present or absent.

Operational Definitions

Each parameter was clearly defined prior to data collection. For example, "complete documentation" required all predefined fields to be filled, while "vital signs documented" required recording of heart rate, blood pressure, and oxygen saturation.

Analysis

Given the quality improvement nature of the study, Descriptive statistics were used without inferential testing. Percentages were calculated for each parameter across baseline and post-intervention phases. Comparative analysis across PDSA cycles was performed to assess improvement trends. A total of 436 transfer forms were reviewed at baseline. Subsequent data collection included 436 forms in both PDSA cycle 1 and PDSA cycle 2.

Ethics Statement

This project was conducted as a quality improvement initiative and did not involve human subject research. Administrative approval was obtained from Medical Superintendent/Base Hospital Kinniya. All data were anonymised prior to analysis.

Patient and Public Involvement

Patient and public perspectives were incorporated indirectly through complaints and feedback from receiving institutions. These insights informed identification of the problem and design of interventions. Patients were not directly involved in study design or implementation.

Strategy (PDSA Cycles)

The first PDSA cycle focused on addressing structural deficiencies through training and introduction of a documentation seal. This resulted in improved documentation but did not fully resolve gaps related to emergency contexts and accountability.

The second PDSA cycle introduced a probable diagnosis field and a checking officer system. This intervention addressed residual gaps by incorporating redundancy and accountability into the process, ensuring that incomplete documentation was identified and corrected before transfer.

RESULTS

Baseline analysis of 436 transfer forms demonstrated high compliance in patient identification parameters but significant deficiencies in clinical documentation. Diagnosis was documented in 61.5% of cases, reason for transfer in 71.6%, and treatment given in 42.2%. Time of transfer was recorded in only 14.7% of cases. Oxygen saturation was documented in 26.6%, indicating substantial gaps in critical clinical information. In addition, Analysis revealed significant deficiencies in several key documentation parameters, particularly time of transfer, oxygen saturation, and treatment documentation (Table 2).

Table 2 – High-Risk Gaps at Baseline

Indicator	Baseline (%)	Risk Level
Time of transfer	14.7	Critical
Oxygen saturation	26.6	Critical
Treatment given	42.2	High
Investigation reports	51.4	Moderate

These findings highlighted critical gaps in the transfer process and informed the design of subsequent interventions.

Following PDSA cycle 1, as shown in Figure 1, moderate improvements were observed in selected documentation parameters, particularly diagnosis, reason for transfer, heart rate, and oxygen saturation. However, several key elements, including time of transfer and treatment documentation, remained suboptimal.

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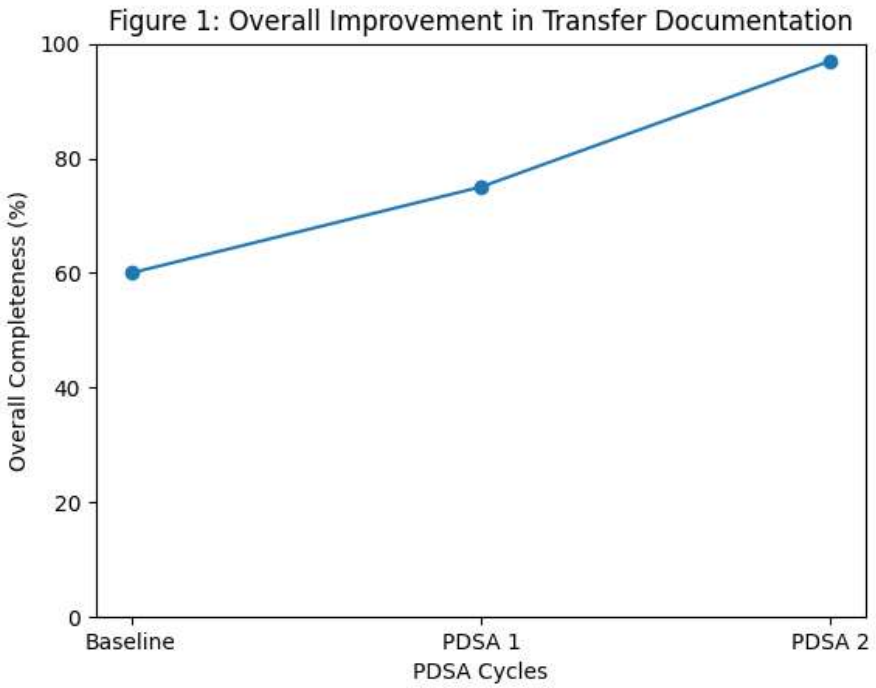

Figure 1. Overall improvement in transfer documentation completeness across baseline and PDSA cycles. Moderate improvement was observed following PDSA cycle 1, with substantial gains after PDSA cycle 2, reflecting the added impact of accountability mechanisms.

As shown in Figure 2, PDSA cycle 2 resulted in substantial improvements across all indicators, with near-complete compliance achieved in most domains. Notably, documentation of time of transfer and oxygen saturation, which demonstrated the lowest baseline performance, improved markedly to above 95%.

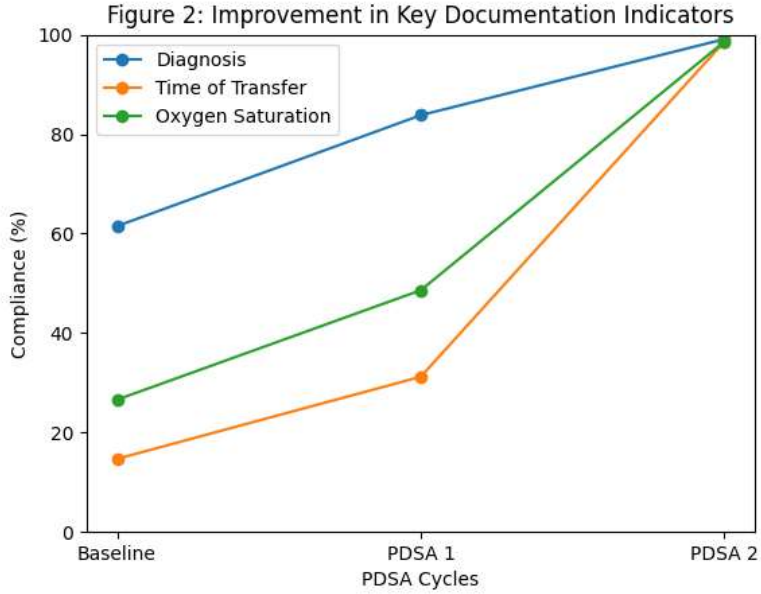

Figure 2. Improvement in key documentation parameters (diagnosis, time of transfer, and oxygen saturation) across PDSA cycles. While partial improvement was observed after PDSA cycle 1, marked improvement in all parameters occurred following PDSA cycle 2, particularly in indicators with low baseline compliance

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Receiving unit documentation improved from 64.7% to 89.4%, and investigation reporting from 51.4% to 96.1%. Authorization documentation reached 100%. The introduction of a checking officer resulted in complete verification of all transfer forms.
The completeness of transfer documentation improved across all indicators following the interventions, as shown in Table 3.

Table 3. Comparison of documentation completeness across baseline and PDSA cycles

Indicator	Baseline (%)	PDSA 1 (%)	PDSA 2 (%)
Diagnosis	61.5	83.8	99.1
Reason for transfer	71.6	88.9	97.2
Heart rate	71.6	89.4	100
Blood pressure	87.6	90.3	100
Oxygen saturation	26.6	48.6	98.6
Treatment given	42.2	51.9	94.9
Time of transfer	14.7	31.2	98.6
Receiving unit	64.7	71.9	89.4
Investigation reports	51.4	83.8	96.1
Authorisation	100	100	100

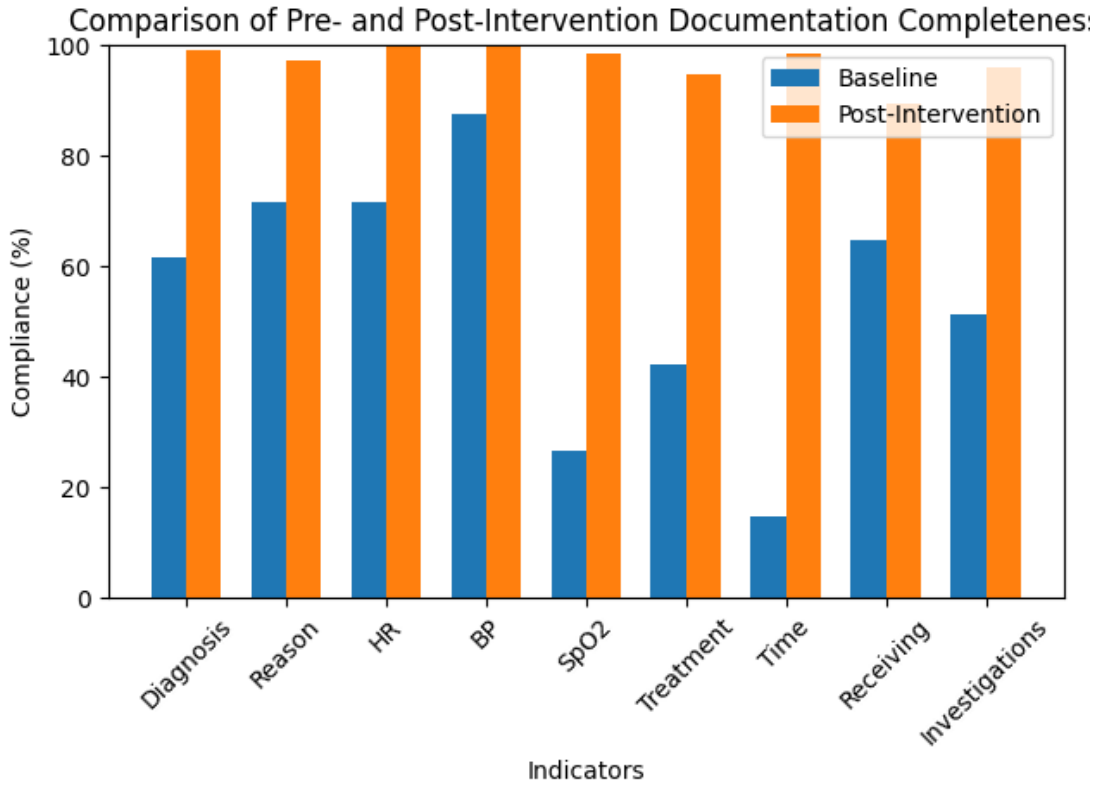

Figure 3. Comparison of documentation completeness before intervention (baseline) and after intervention (post–PDSA cycle 2) across key indicators. Substantial improvement was observed across all domains, with the greatest gains in time of transfer, oxygen saturation, and treatment documentation.

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DISCUSSION

This study demonstrates that, within the study context, deficiencies in transfer documentation are largely influenced by system-level factors rather than solely individual performance. While standardisation improved documentation completeness, substantial improvements were achieved only after the introduction of accountability mechanisms. The critical baseline deficiencies identified (Table 2) demonstrate the importance of structured interventions in improving documentation completeness.

Some indicators, such as receiving unit documentation, demonstrated slower improvement compared to clinical parameters. This may reflect system-level dependencies beyond individual clinician control, including inter-facility communication processes.

The improvements observed following the first PDSA cycle are consistent with existing evidence demonstrating the effectiveness of structured documentation tools in improving communication and patient safety. Studies have shown that the introduction of standardised proformas and checklists significantly enhances the completeness and quality of transfer documentation.[8] In particular, structured documentation acts as a cognitive aid, reducing reliance on memory and ensuring that critical clinical information is consistently captured.

However, the persistence of documentation gaps after the initial intervention highlights the limitations of standardisation alone. Evidence from both high-income and LMIC settings indicates that human factors—including workload, time pressure, and competing clinical priorities—continue to influence documentation behaviour even in the presence of structured tools.[10] These findings underscore the importance of addressing system design rather than relying solely on behavioural change.

The substantial improvements observed following the second PDSA cycle can be attributed to the introduction of accountability and redundancy into the system. The checking officer mechanism ensured verification of documentation prior to transfer, thereby reducing omissions and enhancing reliability. This aligns with WHO recommendations, which emphasise the importance of system redesign, redundancy, and structured communication processes in improving patient safety.[11]

The addition of a probable diagnosis field further demonstrates the importance of contextual adaptation. In emergency settings, requiring definitive diagnosis may not be feasible; however, absence of any diagnostic information significantly impairs clinical decision-making. By enabling documentation of a working diagnosis, the intervention improved both feasibility and effectiveness.

Findings from the LMIC-based quality improvement study further support this approach, demonstrating that structured handoff tools, training, and clearly defined transfer processes significantly improve safety and efficiency in patient transfers.[10] These parallels highlight the generalisability of the intervention across similar resource-constrained settings.

Importantly, this study reinforces that effective transfer processes require integration of multiple components, including standardisation, training, workflow redesign, and accountability mechanisms. Evidence from standardisation-focused studies indicates that checklist-based interventions improve communication quality and reduce errors; however, their effectiveness is maximised when combined with training and system-level support.[13]

Overall, the findings demonstrate that sustainable improvement in transfer documentation requires a multi-layered approach addressing both technical and human factors. The interventions were low-cost and required minimal additional resources, making them feasible and scalable in similar resource-limited settings. This is particularly relevant in resource-limited settings, where low-cost, system-based interventions can achieve substantial improvements in patient safety.

CONCLUSION

A structured, system-based approach incorporating standardisation, training, and accountability mechanisms significantly improved the completeness of inter-hospital transfer documentation. This study demonstrates that, within the study context, addressing system-level factors rather than individual behaviour is key to achieving sustainable improvements in healthcare quality.

Lessons and Limitations

This study was conducted in a single institution, limiting generalisability. The baseline data were retrospective, which may introduce measurement bias. The absence of a control group limits causal inference. Additionally, improvements may have been influenced by increased awareness among staff.

Emergency contexts remain a challenge for documentation, although the introduction of a probable diagnosis field partially mitigated this issue.

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Sustainability

The interventions have been integrated into routine practice and require minimal additional resources. The use of a seal and checking system is sustainable and can be easily replicated in similar settings.

Data Availability Statement

Data are available on reasonable request.

Funding

No external funding was received.

Competing Interests

None declared.

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