Promoting Correct Patient Identification in the Intensive Care Unit of a General Hospital in Tabriz, Iran: A Best Practice Implementation Project

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A R T I C L E I N F O	A B S T R A C T
	Introduction: Patient identification, defined as the accurate matching of a patient to intended interventions while communicating identity information consistently throughout care, is critical for patient safety. Incorrect patient identification is a leading unintentional cause of patient harm and poses a significant safety challenge in healthcare facilities. This project aimed to enhance correct patient identification in the intensive care unit of a general hospital in Tabriz, Iran. **Methods:** A clinical audit, utilizing the JBI Practical Application of Clinical Evidence System (JBI PACES) tool, was conducted. Seven audit criteria, representing best-practice recommendations for correct patient identification, were employed. The project involved a baseline audit, the implementation of multiple strategies, and a follow-up audit to assess changes in practice. ***Results:*** Significant improvements were observed in the follow-up audit compared to the baseline audit, including the use of at least two identifiers to check patient identity before care (from 22% to 100%), provision of clear protocols for patients lacking identification or with similar identities (from 17% to 94%), labeling of containers in the presence of patients (from 33% to 89%), education of healthcare workers in correct patient identification procedures (from 33% to 94%), patient education on the importance of correct identification procedures (from 28% to 94%), and utilization of white identification bands or biometric technologies across healthcare facilities (from 6% to 22%). ***Conclusions:*** The application of standard clinical audit tools in hospitals can enhance the quality of patient services and improve the effectiveness of interventions by identifying weaknesses in the patient care process.

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Introduction

The subject of patient safety is inherently linked to delivering high-quality healthcare services and has garnered widespread attention and discussion among healthcare providers, trade associations, and government entities (1).

The Institute of Medicine's pivotal reports, "To Err Is Human" (2) and "Crossing the Quality Chasm" (3), catalyzed action for action within the U.S. healthcare system, emphasizing the neglect of fundamental safety elements within hospitals (4).

The Joint Commission, in 2003, integrated two patient identifiers into its inaugural patient safety goals, aiming to prevent identification errors and mitigate "wrong-patient" surgeries (5).

Two critical milestones shaped the global discourse on patient safety: the establishment of the World Alliance for Patient Safety by the World Health Organization (WHO) in 2004 and the launch of the "Nine Patient Safety Solutions" program by the WHO's Collaborating Centre for Patient Safety Solutions in 2007 (6,7).

These initiatives aimed to disseminate knowledge internationally, offering recommendations to ensure global patient safety and reduce healthcare errors, including those related to patient identification.

Given the multifaceted nature of patient safety within hospital workflows, we observed that patient identification is a comprehensive, multidisciplinary responsibility encompassing structural elements, work process designs, organizational culture, professional practices, and user participation.

Instances of non-conformities in patient identification have raised concerns in healthcare services (7-10).

Incorrect identification leads to adverse events, including errors in drug administration, blood components handling, procedures, surgeries, laboratory and radiological testing, and even incorrect newborn handovers during discharge and breastfeeding (11).

In response to identified errors, the National Patient Safety Agency (NPSA) issued specific recommendations on the use of identification wristbands in the United Kingdom in 2005

(12). Although the use of patient wristbands reduces error rates, any inaccuracies on the wristbands can introduce confusion and heighten the risk of adverse events (9)[9].

Patient identification, defined as the accurate matching of a patient to intended interventions and the precise communication of patient identity throughout the care continuum, involves not only physical identification but also technologies enhancing accuracy (13).

Ideal patient identifiers should possess attributes of uniqueness, ubiquity, and immutability (14).

Various technological approaches and operational processes are essential to optimize accurate patient identification, meeting the diverse demands for data use and reuse by stakeholders (15).

Inaccurate patient identification adversely affects clinical decision-making, treatment, patient outcomes, privacy, and results in duplicative testing and increased costs (16-19). Despite the prevalence of preventable adverse events, patient safety, and identification, specifically, receive insufficient attention in the developing world (20). Patient identification represents an attractive target for improving patient safety, impacting all aspects of hospital care without requiring high-tech resources (21).

This study aimed to employ clinical audit methods to assess correct patient identification practices in a general hospital in East Azerbaijan, Iran. Furthermore, the project aimed to identify barriers to compliance with best practices and assess the effects of implementing strategies to enhance correct patient identification in the intensive care unit of a general hospital in Tabriz, Iran.

Aims and Objectives

The specific objectives of this project were:
1. To determine current compliance with best practice recommendations regarding correct patient identification in the intensive care unit.
2. To identify barriers and facilitators to improving compliance and develop strategies to address areas of non-compliance.
3. To evaluate changes in compliance with evidence-based practice recommendations following the implementation of strategies to address identified barriers and enhance

identified facilitators in the intensive care unit.

Materials and Methods

This evidence implementation initiative employed the JBI Evidence Implementation framework, which is rooted in the audit and feedback process and a systematic approach to recognizing and addressing barriers to compliance with recommended clinical practices. The process comprises seven stages: (1) identification of the practice area for modification (2), involvement of change agents (3), assessment of contextual factors and readiness for change (4), evaluation of current practice (i.e., baseline audit) against evidence-based criteria (5), implementation of practice modifications (6), re-assessment of practice through a follow-up audit, and (7) consideration of the sustainability of practice changes.

In this evidence implementation endeavor, the Joanna Briggs Institute Practical Application of Clinical Evidence System (JBI PACES) and Getting Research into Practice (GRiP) audit and feedback tool were utilized. The JBI PACES and GRiP framework for advancing evidence-based healthcare entail three phases of activity:

1. Formation of a project team and execution of a baseline audit based on criteria informed by the evidence.

2. Reflection on the results of the baseline audit, followed by the design and implementation of strategies to address non-compliance identified in the audit, guided by the JBI GRiP framework.

3. Conducting a follow-up audit to evaluate the outcomes of implemented interventions aimed at enhancing practice and identifying potential future practice issues to be addressed in subsequent audits (22).

Ethical considerations

This project was registered as a quality improvement activity within the hospital; therefore, it did not require ethical approval. Despite this, the audit activity and the quality improvement process were overseen by the ethical committee in our organization to ensure all ethical considerations were in agreement with safeguarding the rights, safety, and dignity of the participants.

Phase 1: Stakeholder engagement (or team establishment) and baseline audit.

The audit team comprised physicians, personnel from the admission and discharge departments, emergency department staff, quality improvement specialists, nurses, Ph.D. students specializing in healthcare management, the quality control expert from the general hospital, and research personnel. The criteria used for the audit were formulated based on the most authoritative and accessible evidence (23), and included the following seven items:

1. At least two identifiers are used to check the identity of the patient prior to administering care.

2. Clear protocols are provided for patients lacking identification or patients with the same.

3. Containers used for blood and other specimens are labeled in the presence of the patients.

4. Healthcare workers are educated in correct patient identification procedures.

5. Patients are educated on the importance and relevance of correct identification procedures.

6. Standardized non-verbal approaches are used for identification of comatose or confused patients.

7. White identification bands or biometric technologies are used for patient identification across facilities within a healthcare system.

The JBI-developed criteria were translated into Persian by two researchers. A dedicated meeting was held to inform project members about the details and discuss audit criteria and data collection methods. In March 2021, a baseline audit was conducted to assess prevailing practices ensuring accurate patient identification in the 24-bed intensive care unit of a general hospital in Tabriz.

The checklist, consisting of seven questions, focused on service providers (nurses) for five questions and service recipients (patients) for two. All 50 nurses, working in three shifts, participated, addressing criteria 1 through 5. Additionally, a random sample of 916 patients (20% of

4584 admissions over six months in the ward) responded to criteria 6 through 7.

Phase 2: Design and implementation of strategies to improve practice (GRiP)

Over the five-month implementation period from March to August 2021, a post-baseline audit analysis aimed to identify discrepancies between existing practices and recommended best practices.

The project team systematically categorized items into excellent (exceeding 75%), moderate (50%-75%), and low (below 50%) performance. Utilizing the JBI GRiP tool, the team identified barriers hindering effective practices and proposed improvement strategies (24). The audit team discussed the necessary resources for implementing these strategies.

Face-to-face meetings were organized to review the GRiP report, gathering opinions

from key stakeholders. Continuous communication channels were established to keep stakeholders updated on audit results and relevant details throughout the process.

Phase 3: Follow-up audit post-implementation of change strategy

During August 2021, a follow-up audit was executed employing identical methodologies to those utilized in the initial baseline audit. The purpose of this evaluation was to measure shifts in conformity with the established evidence-based audit criteria.

Results

Phase 1: Baseline Audit

Data is graphically presented using JBI PACES software version 220 (Joanna Briggs Institute, Adelaide, Australia) in Figure 1.
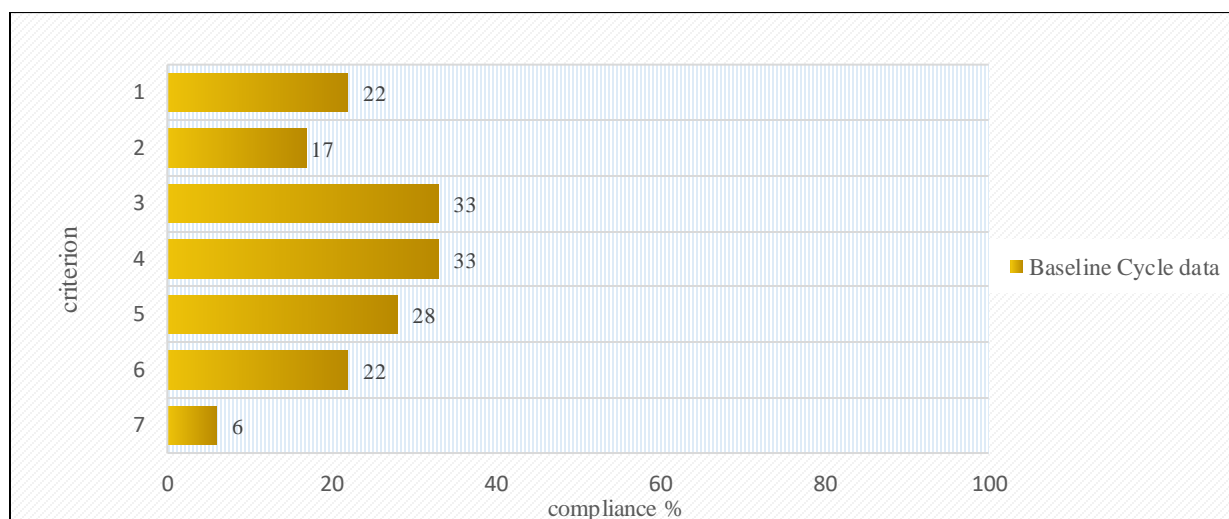

Figure 1: **Compliance with best practice audit criteria in baseline audit (%)**

The compliance with best practices for patient identification criteria varied, with percentages as follows: at least two identifiers (22%), clear protocols for patients lacking identification (17%), labeled containers in the presence of patients (33%), healthcare workers educated in patient identification procedures (33%), patients educated on correct procedures (28%), standardized non-verbal approaches for comatose or confused patients (22%), and use of white identification bands or biometric technologies (6%).

Phase 2: Strategies for Getting Research into Practice (GRiP) Seven barriers to implementing best practices were identified,

and corresponding strategies were devised and implemented, as outlined in Table 1. Barrier 1: Lack of Identifiers for Patient Identity Verification. To address this barrier, the hospital implemented several key actions, including the establishment of clear protocols for patient identification using dual identifiers (e.g., father's name and birth date). Additionally, training sessions on identity verification procedures were integrated into healthcare workers' orientation and ongoing professional development, potentially becoming part of accreditation educational sessions over time. Acquiring infrastructure for generating patient identification codes implementing

patient education on the significance of accurate identification, and respecting privacy concerns, were crucial components of overcoming this barrier.

Barrier 2: Lack of Clear Protocols for Patient Identification

Strategies to overcome this barrier involved the establishment of explicit policies and procedures, and engaging stakeholders for patients without identification. A comprehensive 200-hour training workshop for emergency department nurses and guards, along with the development and distribution of electronic pamphlets among healthcare professionals, were implemented.

Barrier 3: Lack of Labeling of Containers in the Presence of Patients.

Interventions to address this barrier included a 150-hour training workshop for health workers in inpatient and diagnosis wards, ongoing monitoring of policies and procedures by ward nurses, equipping all wards with labeling hardware, implementing technology for admission blood and specimen labeling across all hospital wards, and resolving potential software issues through the IT Department.

Barrier 4: Lack of Education for Healthcare Workers on Correct Patient Identification Procedures.

Actions taken to overcome this barrier encompassed delivering educational sessions to healthcare workers, continuous monitoring and follow-up by the hospital's educational supervisor, conducting weekly training rounds in collaboration with stakeholders, providing oral information, distributing educational brochures, and showcasing relevant videos on correct patient identification.

Barrier 5: Lack of Patient Education on the Importance of Correct Identification Procedures.

To address this barrier, the hospital implemented training for patients upon arrival, a dedicated course on identification procedures, educational videos in the wards, patient involvement in the identification process, and distribution of oral and printed educational materials.

Barrier 6: Lack of White Identification Bands or Biometric Technologies Across Healthcare Facilities.

Strategies involved purchasing and installing white identification band equipment in admission departments, modifying the admission process to incorporate white identification band technologies, providing information to patients, and ensuring continuous monitoring of hardware and software equipment by IT engineers during the admission process. Despite these efforts, one barrier remains unresolved in this hospital—the use of standardized non-verbal approaches for identifying comatose or confused patients. The lack of necessary infrastructure, encompassing both hardware and software, has made it currently unfeasible to implement this approach within the hospital (Table 1).

Table 1: GRiP matrix

Barrier	Strategy	Resources	utcomes
Lack of identifiers to check the identity of the patient prior to administering care.	Establish clear protocols for patient identification using two identification codes, Training, Procurement of infrastructure for generating patient identification codes, Patient Education	Educational Content, Manpower Cost, Teamworking, Financial Support	Promotion patient identification process, accurate patient identification
Lack of clear protocols for patients' identification.	Establish of clear policies and procedures involving stakeholders for patients without identification, Developing and distributing electronic pamphlets among service delivery team.	Educational Content, Manpower Cost, Financial Support, Education Environment	Promotion patient identification process, accurate patient identification
Lack of Containers used for blood and other specimens are labelled in the presence of the patients.	Organizing a training workshop, Continuous monitoring, equipping all wards with labelling hardware, implementing technology for admission blood, Resolving potential software problems	Educational Content, Equipment's cost, Financial Support, Education Environment	Promotion patient identification process, accurate patient identification

Lack of education for healthcare workers on correct patient identification procedures.	Delivering educational sessions to healthcare workers, monitoring and following up with the hospital's educational supervisor, conducting weekly training rounds in the wards with stakeholders, providing oral information and pamphlets to healthcare workers, printing and distributing educational brochures on correct patient identification, and playing educational videos related to correct patient identification.	Educational Content, Manpower Cost, Financial Support, Education Environment	Promotion patient identification process, accurate patient identification
Lack of patient education on the importance and relevance of correct identification procedures.	Providing training for patients upon arrival in a simple and understandable language, conducting a training course on correct identification procedures, playing educational videos in the wards, patient involvement in the correct identification, providing oral information, printing, pamphlets to patients, distributing educational brochures	Educational Content, Manpower Cost, Financial Support, Education Environment	Promotion patient identification process, accurate patient identification
Lack of white identification bands or biometric technologies are used for patient identification across f healthcare facilities within a healthcare system.	Purchasing and installing white identification bands equipment in admission departments, modifying the admission process to incorporate white identification bands technologies, providing oral information and pamphlets to patients regarding the use of white identification bands during the admission process	Educational Content, Manpower Cost, Financial Support, Education Environment	Promotion patient identification process, accurate patient identification

Phase 3: Follow-up audits
Figure 2 compares follow-up audit results with baseline results. Compliance rates improved: Criterion 1 reached 100%, Criteria 2, 4, and 5 achieved 94%, Criteria 3 and 6 reached 89%, and Criterion 7 achieved 22% in the follow-up cycle.
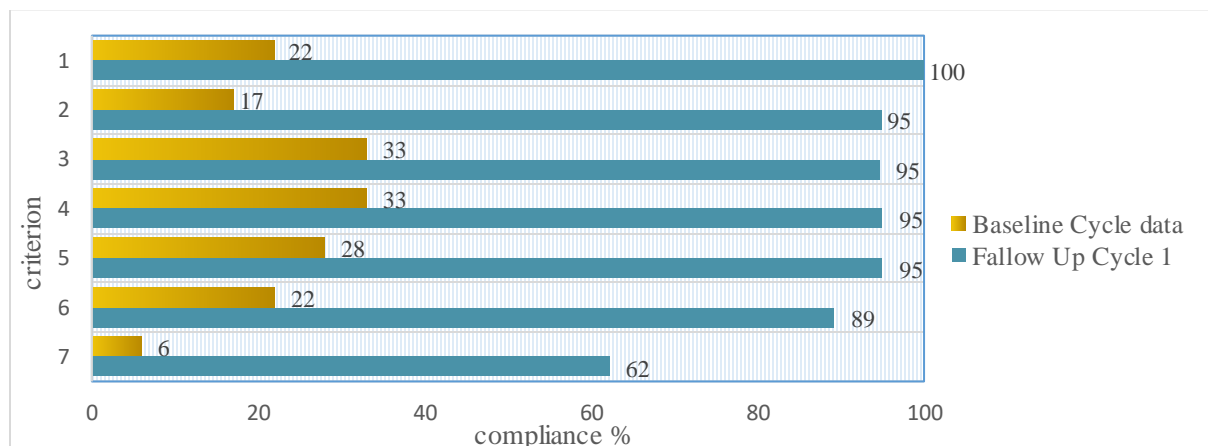

Figure 2: Compliance with best practice audit criteria in follow-up audit (%)

Discussion

The present study has brought to light various issues associated with the patient identification process within the hospital. The application of the JBI criteria notably enhanced the accuracy of patient identification in a hospital setting, aligning with prior research findings (25-27).

One pivotal criterion emphasized the use of at least two identifiers to verify patient identity. The implementation of this approach led to a significant improvement in the hospital's performance, consistent with findings from other studies (28,29).

The second criterion addressed the necessity of developing clear protocols for

patients lacking identification. The absence of such protocols, particularly for patients without proper identification, could expose the hospital to legal complications and pose risks to critically ill patients. The involvement of stakeholders and educational sessions played a pivotal role in establishing these protocols, in harmony with previous research (30,31).

The third criterion underscored the importance of labeling containers used for blood and other specimens in the presence of patients. Shifting from traditional methods to adhere to this criterion resulted in a notable enhancement, aligning with the studies by Giavarina et al. (2017) and Saadati et al. (2019), emphasizing the role of labeling in reducing medical errors and enhancing patient safety (4,32).

The fourth criterion concentrated on educating healthcare workers in proper patient identification procedures. The incorporation of educational sessions for healthcare workers proved highly effective in bringing about positive change, consistent with numerous studies supporting the efficacy of this approach (1,33,34).

The fifth criterion stressed the importance of educating patients about the significance and relevance of correct identification procedures. Recognizing patients as key stakeholders in the process, and engaging them in their identification significantly contributed to improving overall identification accuracy (35).

Lastly, the hospital adopted the criterion of using white identification bands or biometric technologies for patient identification across facilities. This strategy demonstrated a considerable improvement in the proper identification of patients throughout their hospital stay. The use of identification bracelets emerged as a facilitating factor in the patient identification process (36), aligning with findings from other studies in this field (7,37).However, one criterion from the JBI recommendations remained unimplemented in this hospital-the use of standardized non-verbal approaches for identifying comatose or confused patients. The primary reason for this omission was the lack of appropriate infrastructure, encompassing both software

(HIS) and hardware equipment within the hospital.

While the hospital did not fully embrace one of the proposed criteria due to infrastructure limitations, the successful implementation of other features demonstrated a tangible improvement in the patient identification process.

Despite the localized constraint, the identified enhancements provide valuable insights for hospitals globally, offering a template for improvement that can be adapted to varying contexts. Implementing these proposed criteria has the potential to enhance patient safety in most hospitals at a minimal cost, with due consideration for the unique challenges each healthcare setting may face. To enhance enforceability, future initiatives could involve the integration of these identified criteria into hospital accreditation standards or regulatory frameworks, ensuring a systematic and standardized approach to patient identification across healthcare institutions.

Conclusion

This evidence implementation project, utilizing a clinical audit tool, aimed to enhance correct patient identification in the Intensive Care Unit of a general hospital setting. The audit results indicated a significant improvement in the accurate identification of patients. From this study, it can be concluded that interventions such as delivering educational packages, conducting workshops and seminars, equipping hardware and software, formulating new policies and procedures, utilizing assessment tools and checklists, and providing oral information to patients and staff can facilitate the successful implementation of evidence into clinical practice. Further audits will be necessary to monitor practice and effect changes as required. Health policymakers and top healthcare managers can leverage these results to implement and adhere to suggested interventions in other settings, thereby improving the person-centered approach to fall prevention in hospitals.

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