Quality improvement
PROJECT

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INTRODUCING WHO-RECOMMENDED TRAUMA DOCUMENTATION FORM TO ENHANCE TRAUMA MANAGEMENT AND IMPROVE PATIENT OUTCOMES.

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ABSTRACT

Background: This Quality Improvement Project (QIP) aims to evaluate and enhance the documentation process for trauma patients presenting to the Surgical Trauma Department at Combined Military Hospital (CMH) Abbottabad. Proper documentation is critical for ensuring continuity of care, optimizing patient management, and maintaining medico-legal accuracy. This audit will assess the existing documentation practices against standardized guidelines and introduce the WHO Standardized Emergency Unit Form to streamline record-keeping and improve data accuracy. The project was conducted over a six-week period, from February 1 to March 10, 2022, with the goal of identifying deficiencies, implementing corrective measures, and ultimately improving compliance with standardized documentation protocols.

Aim and Objectives : This Quality Improvement Project (QIP) aims to evaluate and enhance the documentation process for trauma patients presenting to the Surgical Trauma Department at Combined Military Hospital (CMH) Abbottabad. Proper documentation is critical for ensuring continuity of care, optimizing patient management, and maintaining medico-legal accuracy. This audit will assess the existing documentation practices against standardized guidelines and introduce the WHO Standardized Emergency Unit Form to streamline record-keeping and improve data accuracy. The project was conducted over a six-week period, from February 1 to March 10, 2022, with the goal of identifying deficiencies, implementing corrective measures, and ultimately improving compliance with standardized documentation protocols.

Methodology: This audit was conducted to evaluate and improve the documentation process for trauma patients at CMH Abbottabad. Initially, a thorough review of the existing documentation practices was carried out, revealing the absence of a standardized documentation form. To assess the impact of structured documentation, feedback was collected from healthcare providers regarding the current practice. Subsequently, the WHO Standardized Emergency Unit Form: Trauma was introduced on a trial basis in one surgical unit. Training sessions were conducted to familiarize the medical staff with its proper use, ensuring compliance and efficiency in documentation. Following successful implementation in the pilot unit, the form was progressively introduced across all surgical units. Key performance indicators—including complication rates, in-hospital mortality, duration of hospital stay, and the mean time to initial assessment—were analyzed using hospital records to compare outcomes before and after the implementation of the standardized form.

Results: The primary outcome measure was case coverage, defined as the percentage of trauma cases documented using the standardized form each week. In the first audit cycle, compliance started at 30% in the initial week but improved to 66% after targeted interventions. The second cycle demonstrated a significant improvement, with coverage consistently ranging between 83% and 90%. However, during the third cycle, documentation rates initially dropped to 52% due to doctor strikes and the induction of a new batch of foundation year trainees. This decline was short-lived, as focused training efforts helped restore compliance to 77% in the following week.

In addition to improved documentation rates, there was a notable reduction in the mean time to initial assessment, which decreased by 30%, from 38 ± 6.2 minutes to 26 ± 4.8 minutes ($p = 0.023$), reflecting enhanced efficiency in patient evaluation and management. These findings underscore the positive impact of implementing a standardized trauma documentation system on both workflow efficiency and patient care.

Conclusion: Effective medical documentation is fundamental to ensuring seamless patient care, medico-legal accountability, and interdisciplinary communication. The introduction of the WHO Standardized Emergency Unit Form: Trauma at CMH Abbottabad significantly improved documentation practices, providing a structured and systematic approach to trauma patient management. This not only enhanced communication among healthcare providers but also contributed to more efficient decision-making and improved patient outcomes. By standardizing documentation, the initiative reinforced consistency, accuracy, and quality of care, ultimately strengthening the overall trauma management system.

Keywords: Audit, medical documentation, trauma care, qualityimprovement, implementation, WHO Standardized Emergency Unit Form, patient safety.

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INTRODUCTION

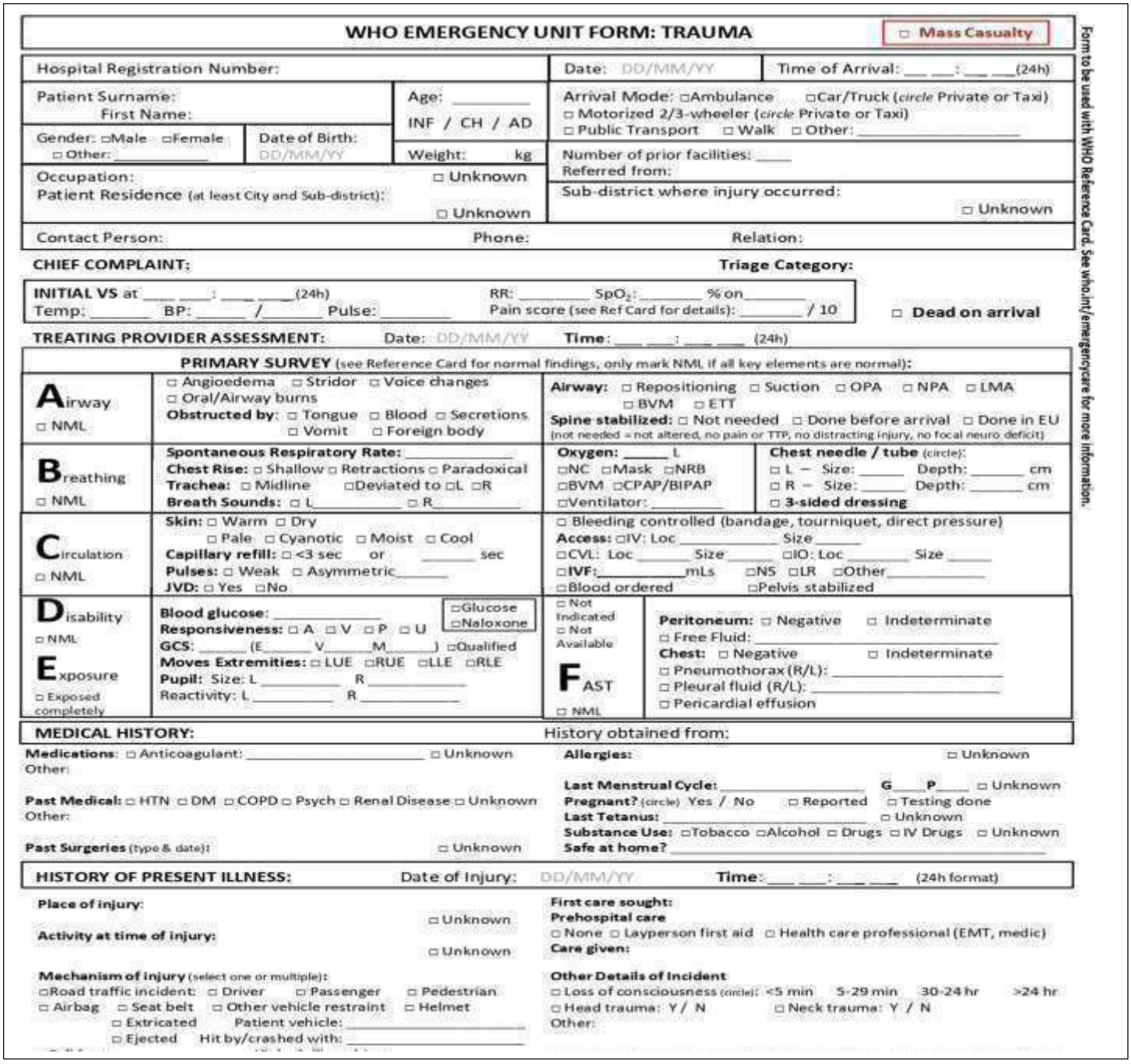
Effective medical documentation is the cornerstone of high-quality patient care, playing a crucial role in ensuring clear communication, continuity of care, and medico-legal accountability. In trauma management, documentation is particularly vital, as it facilitates a structured approach to assessment, prevents missed injuries, and serves as a valuable tool for quality improvement (QI) initiatives.At CMH Abbottabad, like many hospitals in resource- limited settings, the absence of a standardized trauma documentation system posed challenges in ensuring consistent, comprehensive, and accurate record- keeping[1]. This Quality Improvement Project (QIP) was undertaken to audit existing documentation practices and implement the WHO Standardized Emergency Unit Form: Trauma to enhance trauma care documentation. The WHO Standardized Emergency Unit Form: Trauma is designed to streamline documentation by incorporating demographic details, primary and secondary surveys, vital signs, medical history, clinical findings, diagnostic tests, interventions, management plans, and follow-ups. By adopting this standardized form, the aim was to improve documentation accuracy, enhance interdepartmental communication, and facilitate more efficient decision-making in trauma care[2].Globally, structured documentation has been shown to reduce errors, optimize resource utilization, and improve patient outcomes. Studies have highlighted the benefits of standardized trauma documentation, demonstrating enhanced triage accuracy, reduced mortality, and better adherence to clinical protocols. In low-resource settings, implementing structured documentation is particularly valuable in addressing gaps in trauma care and ensuring data-driven improvements in patient management. This project sought to assess the impact of structured trauma documentation at CMH Abbottabad by evaluating compliance, efficiency, and patient outcomes before and after implementing the WHO Standardized Emergency Unit Form. The findings from this audit provide Insights into the role of standardized documentation in optimizing trauma care delivery, reinforcing its importance as a fundamental component of quality trauma management.

MATERIALS AND METHODS

The documentation process for trauma patients in the Emergency Department of CMH Abbottabad was initially reviewed to assess existing practices and identify areas for improvement. It was observed that there was no standardized documentation form in use, and the trauma registry only recorded basic sociodemographic details. Documentation practices varied among healthcare providers—some relied on prescription sheets to note vital signs, patient history, and management plans, while others depended on memory and verbal handovers, leading to inconsistencies and potential information gaps. To establish a baseline for comparison, key performance indicators were recorded, including the mortality rate, average hospital stay duration, and mean time to initial assessment for trauma patients over the previous month. This data was retrieved from the Department of Medical Records and Statistics at CMH Abbottabad. Additionally, feedback from doctors involved in trauma care was collected through structured discussions and surveys[3]. The majority of respondents expressed dissatisfaction with the existing system, citing challenges due to the lack of a structured documentation tool. There was significant support for implementing a standardized form to improve efficiency and ensure comprehensive record-keeping. Following this assessment, the WHO Standardized Emergency Unit Form: Trauma was introduced on a trial basis to evaluate its applicability in the local setting. The form was tested for its feasibility in daily clinical practice, and the implementation process was tailored to address challenges identified during the initial assessment phase.

WHO Standardized Emergency Unit Form

FIGURE 1: WHO Standardized Emergency Unit Form: Trauma - Page 1



WHO EMERGENCY UNIT FORM: TRAUMA ☐ Mass Casualty

Hospital Registration Number: | Date: DD/MM/YY | Time of Arrival: ___ ___:___ ___(24h)

Patient Surname: First Name: | Age: _____ INF / CH / AD | Arrival Mode: ☐Ambulance ☐Car/Truck (*circle* Private or Taxi) ☐ Motorized 2/3-wheeler (*circle* Private or Taxi) ☐ Public Transport ☐ Walk ☐ Other: _____

Gender: ☐Male ☐Female ☐ Other: _____ | Date of Birth: DD/MM/YY | Weight: kg | Number of prior facilities: ____ Referred from:

Occupation: ☐ Unknown | Sub-district where injury occurred: ☐ Unknown

Patient Residence (at least City and Sub-district): ☐ Unknown

Contact Person: Phone: Relation:

CHIEF COMPLAINT: **Triage Category:**

INITIAL VS at ___ ___:___ ___(24h) Temp: _____ BP: _____/_____ Pulse: _____ RR: _____ SpO_2: _____ % on _____ Pain score (see Ref Card for details): _____ / 10

☐ **Dead on arrival**

TREATING PROVIDER ASSESSMENT: Date: DD/MM/YY **Time:** ___ ___:___ ___ (24h)

PRIMARY SURVEY (see Reference Card for normal findings, only mark NML if all key elements are normal):

Airway ☐ NML
☐ Angioedema ☐ Stridor ☐ Voice changes ☐ Oral/Airway burns
Obstructed by: ☐ Tongue ☐ Blood ☐ Secretions ☐ Vomit ☐ Foreign body
Airway: ☐ Repositioning ☐ Suction ☐ OPA ☐ NPA ☐ LMA ☐ BVM ☐ ETT
Spine stabilized: ☐ Not needed ☐ Done before arrival ☐ Done in ED
(not needed = not altered, no pain or TTP, no distracting injury, no focal neuro deficit)

Breathing ☐ NML
Spontaneous Respiratory Rate: _____
Chest Rise: ☐ Shallow ☐ Retractions ☐ Paradoxical
Trachea: ☐ Midline ☐Deviated to ☐L ☐R
Breath Sounds: ☐ L_____ ☐ R_____
Oxygen: _____ L ☐NC ☐Mask ☐NRB ☐BVM ☐CPAP/BIPAP ☐Ventilator: _____
Chest needle / tube (circle): ☐ L – Size: _____ Depth: _____ cm ☐ R – Size: _____ Depth: _____ cm ☐ **3-sided dressing**

Circulation ☐ NML
Skin: ☐ Warm ☐ Dry ☐ Pale ☐ Cyanotic ☐ Moist ☐ Cool
Capillary refill: ☐ <3 sec or _____ sec
Pulses: ☐ Weak ☐ Asymmetric_____
JVD: ☐ Yes ☐No
☐ Bleeding controlled (bandage, tourniquet, direct pressure)
Access: ☐IV: Loc _____ Size _____ ☐CVL: Loc _____ Size _____ ☐IO: Loc _____ Size _____
☐**IVF:**_____mLs ☐NS ☐LR ☐Other_____
☐Blood ordered ☐Pelvis stabilized

Disability ☐ NML
Blood glucose: _____ ☐Glucose ☐Naloxone
Responsiveness: ☐ A ☐ V ☐ P ☐ U
GCS: _____ (E_____ V_____M_____) ☐Qualified
Moves Extremities: ☐ LUE ☐RUE ☐LLE ☐RLE
Pupil: Size: L _____ R _____
Reactivity: L _____ R _____

Exposure ☐ Exposed completely

FAST ☐ NML
☐ Not Indicated ☐ Not Available
Peritoneum: ☐ Negative ☐ Indeterminate ☐ Free Fluid: _____
Chest: ☐ Negative ☐ Indeterminate ☐ Pneumothorax (R/L): _____ ☐ Pleural fluid (R/L): _____ ☐ Pericardial effusion

MEDICAL HISTORY: History obtained from:

Medications: ☐ Anticoagulant: _____ ☐ Unknown
Other:

Allergies: ☐ Unknown

Past Medical: ☐ HTN ☐ DM ☐ COPD ☐ Psych ☐ Renal Disease ☐ Unknown
Other:

Last Menstrual Cycle: _____ G____P____ ☐ Unknown
Pregnant? (circle) Yes / No ☐ Reported ☐ Testing done
Last Tetanus: _____ ☐ Unknown
Substance Use: ☐Tobacco ☐Alcohol ☐ Drugs ☐ IV Drugs ☐ Unknown
Safe at home? _____

Past Surgeries (type & date): ☐ Unknown

HISTORY OF PRESENT ILLNESS: Date of Injury: DD/MM/YY **Time:** ___ ___:___ ___ (24h format)

Place of injury: ☐ Unknown
Activity at time of injury: ☐ Unknown
Mechanism of injury (select one or multiple):
☐Road traffic incident: ☐ Driver ☐ Passenger ☐ Pedestrian ☐ Airbag ☐ Seat belt ☐ Other vehicle restraint ☐ Helmet ☐ Extricated Patient vehicle: _____ ☐ Ejected Hit by/crashed with: _____

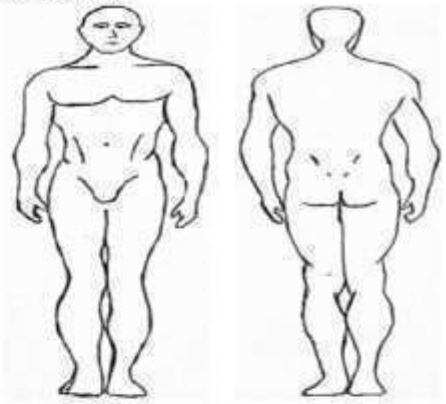
First care sought:
Prehospital care
☐ None ☐ Layperson first aid ☐ Health care professional (EMT, medic)
Care given:
Other Details of Incident
☐ Loss of consciousness (circle): <5 min 5-29 min 30-24 hr >24 hr
☐ Head trauma: Y / N ☐ Neck trauma: Y / N
Other:

Form to be used with WHO Reference Card. See who.int/emergencycare for more information.

PHYSICAL EXAM: (See Reference Card for normal findings. Do NOT mark NML unless all key elements are normal.)

□NML	General	
□NML	Neuro/Psych	
□NML	HEENT	
□NML	Neck	
□NML	Respiratory	
□NML	Cardiac	
□NML	Abdominal	
□NML	Pelvis	
□NML	GU/Rectal	
□NML	MSK	
□NML	Skin	

Detail area of injury:



Form to be used with WHO Reference Card. See who.int/emergencycare for more information.

DIAGNOSTIC TESTS:

UPT: □ Positive □ Negative □ N/A
Hgb: _____ □ Result pending
Blood type: _____
Other:

List imaging studies with results (and check findings below):

□ Pneumothorax □ Pleural Fluid
□ Pulmonary Opacity □ Rib Fracture
□ Pelvic Fracture □ C-spine fracture
□ Extremity Fracture

ADDITIONAL INTERVENTIONS:

Fluids and Medications Given — **Time** (24h)

□ IVF: _____ mLs □NS □LR □Other _____ ____:____
□ Blood products (specify number of units given): ____:____
_____ ____:____
□ Opioid Analgesia: _____ ____:____
□ Other Analgesia: _____ ____:____
□ Sedation/Paralytics: _____ ____:____
□ Antibiotics: _____ ____:____
□ Tetanus: _____ ____:____
□ Other:

Procedures (circle and note outcome) — **Time** (24h):

□ Intubation: _____ ____:____
□ Chest Tube: _____ ____:____
□ Splinting / Reduction: _____ ____:____
□ Pelvic Stabilization: _____ ____:____
□ Simple / Complex Laceration Repair: _____ ____:____
□ Other:

ASSESSMENT (include summary and differential) **AND PLAN** (imaging; meds/interventions; consults with time called/arrived and recs):

REASSESSMENT at ____ ____:____ ____ (24h)
Temp:_____ Pulse:_____ BP:_____/_____ RR:_____ SpO_2:_____ % on_____
□ **Condition same**
Changes:_____

DISPOSITION: Checklist completed: □ Y □ N ED departure (date & time): DD/MM/YY ____ ____:____ ____ (24h)

Diagnoses/Impressions (list all):

Number of serious injuries as judged by provider (circle): 0 1 ≥2

□ **Admit to:** □ Ward _____ □ ICU □ OT
□ **Discharge:** Plan discussed with patient? □ Yes □ No
□ **Transfer to:** _____
□ **Left without being seen or before treatment complete**
□ **Died of** (specify cause - NOT cardiopulmonary arrest): _____

VS at Dispo at: ____ ____:____ ____ (24h)
Temp:_____ Pulse:_____ BP:_____/_____ RR:_____ SpO_2:_____ % on_____
Accepting Provider: _____

Emergency Unit Provider Name/Title (include handovers)	Signature and Date

FIGURE 2: WHO Standardized Emergency Unit Form: Trauma - Page 2

First Cycle

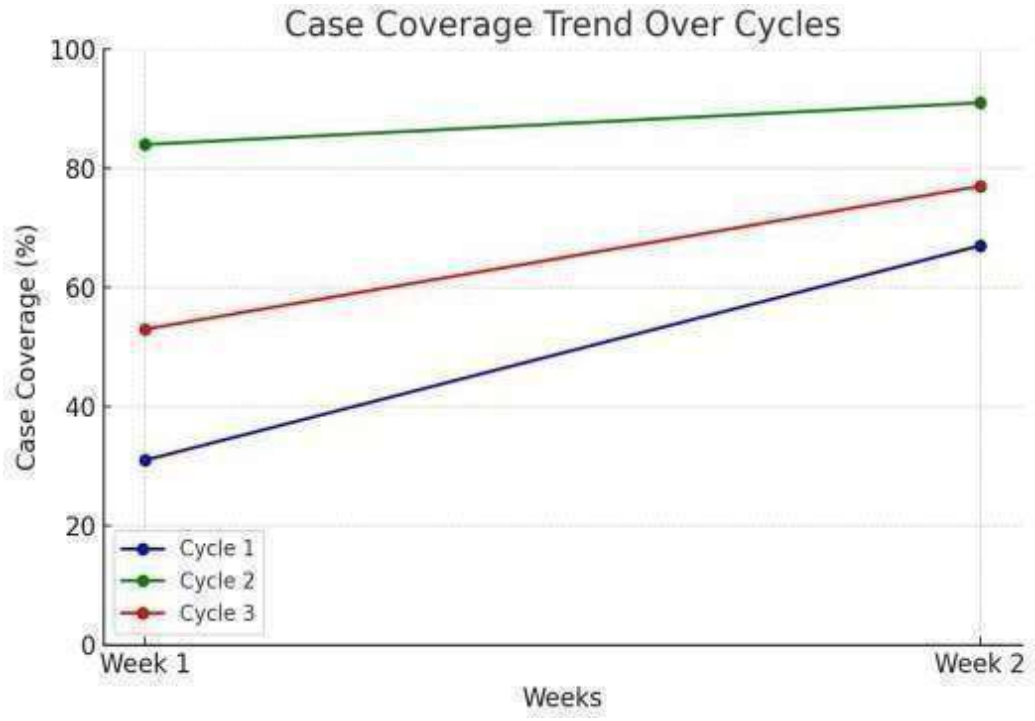
The initial phase of implementation was conducted in one unit of Orthopedic Department at CMH Abbottabad. A comprehensive meeting was held, bringing together consultants, registrars, residents, and interns to introduce the WHO Standardized Emergency Unit Form: Trauma and discuss its significance in improving trauma documentation. Training sessions were conducted under the supervision of senior specialists, ensuring that all team members were well-versed in the structured documentation process. To enhance learning, participants were divided into small groups, and the Reference Card for WHO Emergency Unit Form: Trauma was used as a practical guide. Each participant engaged in hands-on exercises, simulating real-case scenarios to reinforce familiarity with the form's components.Following the training, the form was implemented over a six-week period. Weekly audits were conducted, during which the percentage of documented cases was calculated against the total trauma cases presenting to the unit. Additionally, a detailed section-wise assessment was performed to evaluate completion rates for each component of the form.To identify and address challenges faced during implementation, reflection slips were distributed among the health care professionals, allowing them to share feedback and difficulties encountered. This iterative approach facilitated continuous refinement of the documentation process, ensuring a smoother transition toward standardized record-keeping.

Second and Third Cycles

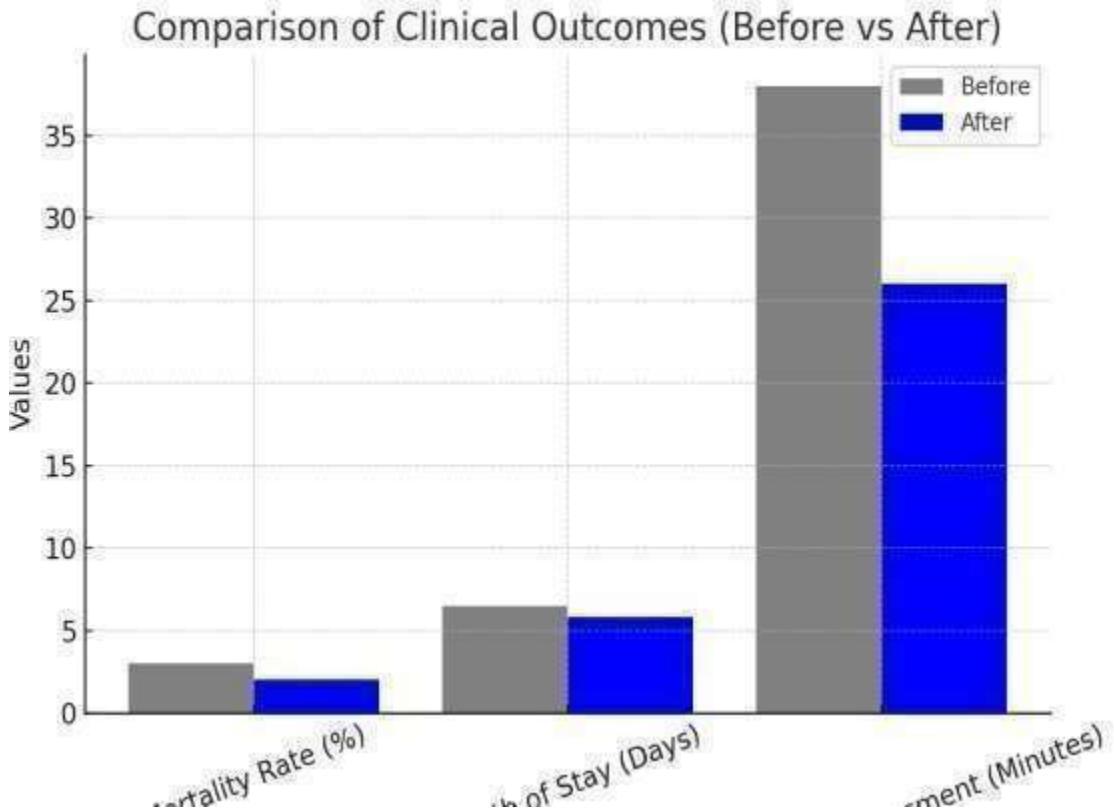
From 15th February to 10th April, the form was fully integrated into the documentation practices of the department. Throughout this period, education and training sessions were conducted for all staff, with a particular focus on addressing challenges encountered during the pilot phase and ensuring smooth implementation across all units.Data collection and analysis were performed after the form had been in use for the entire duration. Key performance indicators such as mortality rate, average length of hospital stay, and mean time to initial assessment were recorded for the month following the completion of the project. These results were then compared to data collected prior to the implementation to assess the changes and improvements brought about by the introduction of the Standardized form. By the end of this phase, the WHO Standardized Emergency Unit Form became the Official documentation method for trauma patients in the department, marking a significant enhancement in documentation practices and patient care management.

Results

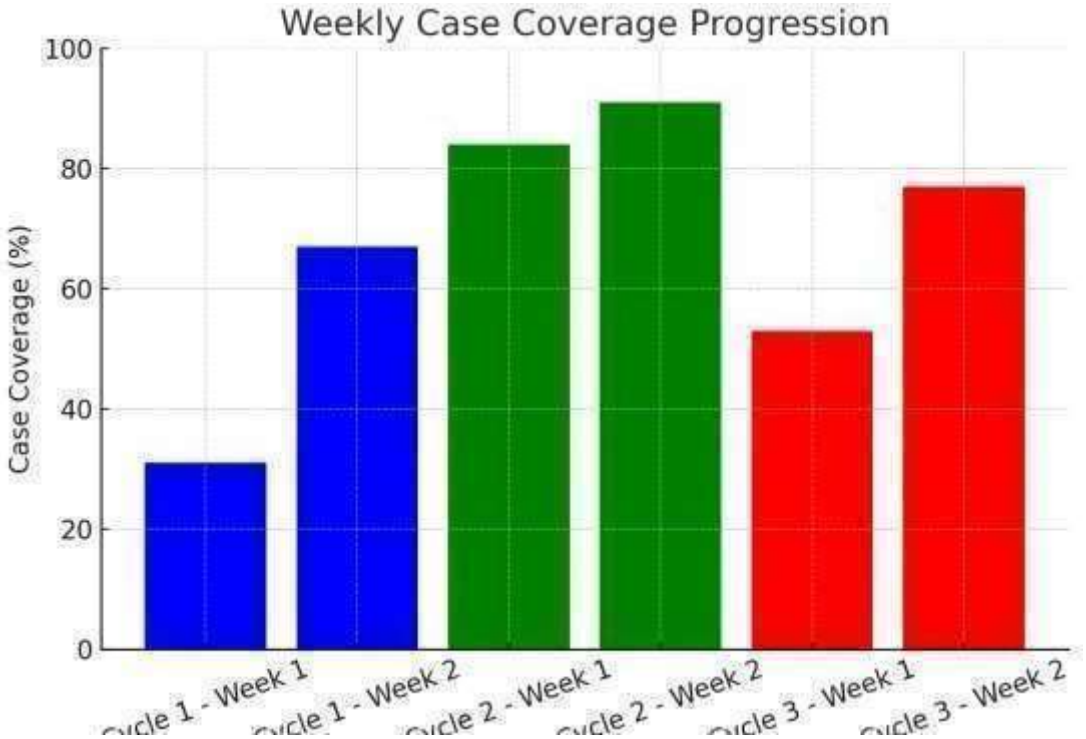
The primary outcome measure for this project was case coverage, which refers to the percentage of trauma cases documented using the newly implemented form in relation to the total number of patients presenting per shift. The goal was to achieve full coverage, ensuring that all trauma cases were appropriately documented.

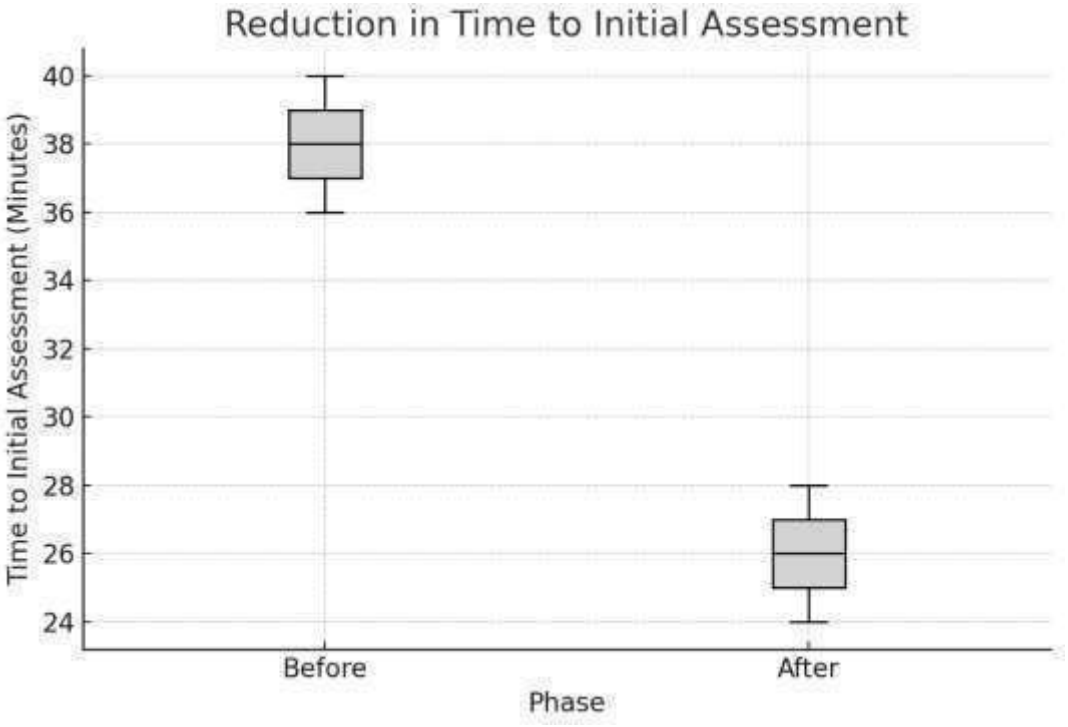


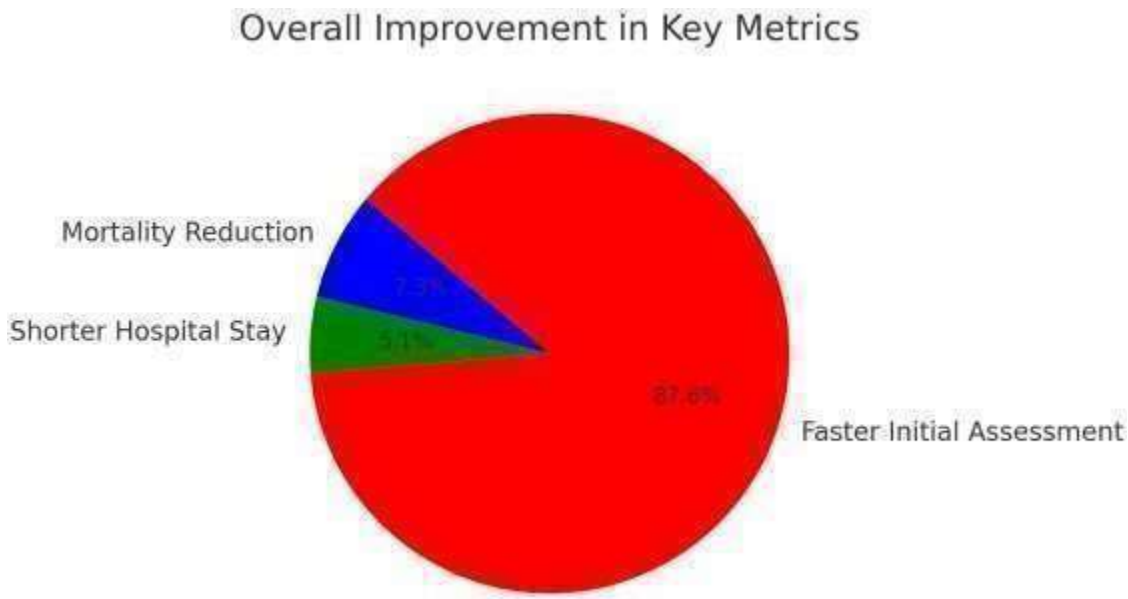
In the first cycle, the initial week had the lowest coverage at 31%, primarily due to initial hesitations among healthcare professionals to adapt to the new system. However, a noticeable improvement was seen by the second week, where coverage increased to 67%.During the second cycle, case coverage reached its peak, with 84-91% coverage in the following weeks, indicating a high level of compliance and successful implementation. However, the third cycle faced significant challenges, including a strike in some units and the temporary closure of the surgery department on several occasions. Additionally, the rotation of house officers (foundation trainees) contributed to some disruption in the implementation process. This resulted in a drop in the first week, with coverage falling to 53%, but it recovered to 77% in the subsequent week.In terms of clinical outcomes, there was a reduction in the mortality rate, which decreased from 3% to 2% following the implementation of the trauma documentation form. The average length of hospital stay also showed a positive change, reducing from 6.5 days to 5.8 days. More notably, the mean time to initial assessment was significantly shortened, from 38 minutes ± 6.2 to 26 minutes ± 4.8 ($p = 0.023$), demonstrating a clear improvement in the efficiency of trauma care.



Feedback from doctors regarding the new documentation method was **overwhelmingly positive**, with many expressing satisfaction with the changes compared to the previous practices.


Weekly Case Coverage Progression
Case Coverage (%)
100
80
60
40
20
0
Cycle 1 - Week 1
Cycle 1 - Week 2
Cycle 2 - Week 1
Cycle 2 - Week 2
Cycle 3 - Week 1
Cycle 3 - Week 2


Reduction in Time to Initial Assessment
Time to Initial Assessment (Minutes)
40
38
36
34
32
30
28
26
24
Before
After
Phase



Discussion

This Quality Improvement (QI) project underscores the significant benefits of utilizing standardized documentation tools, such as the WHO Standardized Emergency Unit Form: Trauma, in enhancing trauma care even within resource-limited settings like CMH Abbottabad. The use of this form, along with the accompanying reference card, ensured proper documentation and contributed to consistent data quality. This tool simplifies the process of capturing essential trauma data points, aligning with NICE guidelines that emphasize the importance of structured information recording in trauma cases. Proper documentation ensures comprehensive patient evaluation, including key aspects such as fatal bleeding, airway management[4], spinal immobilization, breathing, circulation, neurological status, and full exposure, all of which are critical during the primary survey of trauma patients. Additionally, the WHO guidelines recommend that a dedicated team member is responsible for real- time documentation, with the trauma leader ensuring completeness and accuracy of the records.The results of this project reflect a positive shift in case coverage despite initial hesitations. The multifaceted approach employed, which included training, role clarification, and the use of visual aids, effectively enhanced the use of the form. The 31% reduction in the time to initial assessment Has direct implications for improving patient care, potentially influencing morbidity and mortality[5]. However, it is important to note that while the improvements observed in this study are promising, further research is required to control for other confounding factors and to establish causality. The sustainability of these improvements is challenged by factors such as staff turnover and external disruptions (e.g., the strike in certain units during the third cycle). Continuous education, particularly for new staff members, is crucial in maintaining the benefits achieved through the project. Additionally, expanding the audit to evaluate the accuracy and completeness of the documentation, as well as its impact on communication between healthcare providers, would provide a more comprehensive understanding of the form's effectiveness. Feedback from patients and staff regarding the usability of the form could also offer valuable insights into potential areas for further improvement. The findings of this QI project are in line with Montagna et al. (2019), who demonstrated that electronic trauma documentation systems reduce bias and errors, highlighting the significant role of technology in trauma care[9]. The Trauma Tracker system, which supports real-time tracking and automated data capture, was particularly successful in reducing the burden of manual documentation while enhancing clinical decision-making and improving trauma outcomes.This initiative also aligns with the WHO's global recommendations[10] to enhance trauma care through improved documentation and quality monitoring. The WHO Standardized Emergency Unit Form: Trauma plays a vital role in improving the organization of trauma care, contributing to better service delivery. Furthermore, the inclusion of morbidity and mortality (M&M) reviews as part of trauma QI programs aligns with WHO guidelines and emphasizes the importance of structured documentation to reduce

preventable deaths, even in low-resource environments like CMH Abbottabad.Challenges such as staff turnover and external disruptions were notable obstacles, which the WHO acknowledges[6] as barriers to the successful implementation of QI projects. Ongoing education and retraining are essential to overcome these challenges and ensure the long-term sustainability of improvements. The success of structured triage and documentation protocols in improving patient safety has been well-documented in studies from countries like Sweden, where such protocols have helped reduce over-triage and under-triage rates. Our audit similarly showed that structured documentation led to a reduction in the time to initial assessment and improved form utilization, though continued monitoring of triage accuracy and compliance is necessary to sustain these improvements. This QI project also supports the integration of Trauma-Informed Care (TIC) principles[7], which emphasize the role of structured documentation in improving service delivery and identifying patient needs. Kottenstette et al. (2019) demonstrated that trauma-informed assessments (TIA) improve documentation quality and referral rates.

Conclusions

The implementation of the WHO Standardized Emergency Unit Form Trauma at CMH Abbottabad faced several challenges that influenced overall patient documentation. The most significant obstacle was the high patient volume in the emergency room, which created pressure on time management and hindered the goal of achieving full coverage for all trauma cases. Despite these challenges, with continuous practice and adaptation, there was a notable improvement in the use of the form, which led to a marked increase in the documentationSuggesting that incorporating TIC principles could further enhance care efficiency and quality in our setting.The challenges faced in the implementation of the WHO Standardized Emergency Unit Form: Trauma mirror those described by Bommakanti et al. (2018), who outlined the barriers to trauma registry implementation in low- and middle-income countries (LMICs). Factors such as limited resources, staff turnover, and data quality issues were addressed through active stakeholder engagement, adaptation of systems to local contexts, and ongoing training. These strategies were crucial in overcoming the barriers to successful implementation and improving the documentation. Our findings are consistent with previous studies showing that standardized trauma documentation significantly reduces the length of hospital stays and improves the quality of care. For example, in a study conducted at a low-income country hospital[8], the introduction of a trauma registry and electronic patient registration system led to a significant increase in trauma documentation completeness. Similarly, Pennsylvania trauma centers have reported success in improving emergency department documentation through education, redesigned forms, and peer review, leading to fewer documentation deficiencies and better identification of low-severity injuries. In conclusion, staff engagement, continuous training, and the adoption of standardized trauma documentation systems are essential for sustaining improvements in trauma care. This project highlights the importance of structured documentation in improving patient outcomes and contributing to the overall quality of improvement in documentation not only streamlined the assessment process but also enhanced the quality of care provided by the medical team. The accuracy and thoroughness of patient evaluations were significantly improved, allowing for better clinical decision-making and more timely interventions. The success of this Quality Improvement (QI) initiative highlights the potential of structured documentation in improving healthcare outcomes. It underscores the importance of integrating such tools into daily practices within the healthcare system. When properly implemented and maintained, QI initiatives like this can result in measurable, positive changes in patient care, demonstrating that organized efforts can lead to significant Improvements in trauma management even within a resource-constrained environment.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Muhammad Awais Jamil[1], Tahir Nawaz[2]

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Drafting of the manuscript: Muhammad Abbas Khan[4]
Final Version: All Above Mantion above.

Critical review of the manuscript for important intellectual content: Muhammad Awais Jamil[1], Tahir

Disclosures
Animal subjects: All authors have confirmed that this study did not involve animal subjects or tissue. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work.

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