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Evaluating Compliance with Standards in the Emergency Management of Hip Fractures: A Clinical Audit-Based Approach

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Abstract— *Hip fractures represent a significant cause of morbidity and mortality among older adults, with outcomes highly dependent on timely surgical intervention and adherence to clinical guidelines. Clinical audits are essential for assessing the quality of treatment and pinpointing areas for improvement. This study aimed to assess the management of patients with hip fractures against established standards, focusing on the timely management of common problems of the patients, such as pain management, multidisciplinary involvement, and fluid management. A retrospective audit was conducted on patients admitted with hip fractures over two months at a secondary care hospital. Data were collected according to the Royal College of Emergency Medicine (RCEM) treatment tool for common problem management at the Emergency Department (ED). Results were compared to national guidelines and hospital benchmarks. Results showed providing analgesia. Blood samples were taken for investigations, and EWS was recorded in the Emergency Department, showing higher adherence. Meanwhile, pressure ulcer documentation and ECG conduction were at a moderate level. Commencement of IV fluid was satisfactory, and delirium scoring was at least the level of adherence. In conclusion, overall compliance with hip fracture management standards was satisfactory; improvements were needed in the recording of commencement of IV fluids and delirium scoring. Implementing these changes may reduce complications and improve patient outcomes.*

Keyword— *Hip fracture: clinical audits: RCEM tool: Emergency department.*

I. Introduction

Hip fractures are the most common serious injury among frail and elderly individuals presenting to the Emergency Department (ED) in the United Kingdom. In 2022, the UK's National Hip Fracture Database (NHFD) reported more than 72,000 hip fractures across England, Wales, and Northern Ireland [1]. These fractures are fragility injuries that place a significant socioeconomic burden on patients, their families, and healthcare systems. Only a small proportion of patients regain their pre-injury level of function, with up to one quarter needing residential or nursing care after hospital admission [2],[3]. More than a quarter of individuals who experience a hip fracture will die within a year of the incident, often experiencing poor quality of life [4].

Currently, most developed countries are experiencing a demographic transition characterized by a growing proportion of older adults, largely attributed to advancements in medical care that have increased life expectancy. This demographic shift is expected to place significant demands on healthcare and social support systems, particularly in addressing the rising prevalence of age-related conditions and the associated need for long-term care, where a multi-disciplinary team involvement is essential [4]. It is important to ensure that sufficient resources are available and that healthcare services are appropriately provided at the time of admission. It is crucial for health service managers and policymakers to accurately project the future incidence of hip fractures to plan strategies to provide quality service to minimise the complications for the patients as well. Nevertheless, a recent analysis projected a 32% rise in the number of hip fractures in Scotland between 2021 and 2029 (from 7797 to 10,331) and calculated a £25 million annual increase in costs based on an overall increase in the number of hip fracture bed days needed [5].

It is recognized that people who sustain a hip fracture are often very frail and clinically compromised with comorbid medical conditions, both acute and chronic. The aim should therefore be to optimize care through early, proactive interventions and treatments. In response to these challenges, national initiatives such as the Fracture and Fragility Audit Program (FFFAP) have been established to drive improvements in the prevention, management, and long-term care of patients with fragility fractures [5].

The FFFAP, coordinated by the Royal College of Physicians in the United Kingdom, provides a structured framework for auditing clinical practices and outcomes through its three main components:

- The National Hip Fracture Database (NHFD) focuses on the quality and outcomes of care for patients admitted with hip fractures, promoting best practice in surgical, medical, and rehabilitative management.[6]
- The Fracture Liaison Service Database (FLS-DB), which monitors secondary prevention services to ensure that patients who suffer a fragility fracture are assessed and treated for underlying osteoporosis to prevent future fractures. and
- The Falls and Fragility Fracture Audit Program (FFFAP Audit), which assesses the efficacy of fall prevention

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services provided in hospitals and fosters integration between health and social care systems.

These components collectively aim to ensure that patients receive timely surgical intervention, effective osteoporosis management, and comprehensive falls prevention strategies. Since the majority of people (19 out of 20) now live, looking at mortality rates alone is insufficient to assess the quality of treatment. A clinically led national audit has been launched involving all 174 trauma units from the U.K. Lancashire Teaching Hospital Foundation Trust has been involved in this program since June 2010. Financial incentive to the trust as it monitors the Best Practice Tariff. It is expected to achieve the 03 goals set by the NHFD will be achieved as follows [7].

Goal 1: The patient is immediately put at ease with a nerve block and admitted to a specialized ward where a team of nurses, other physicians, and therapists collaborate with them to prepare for surgery and recovery.

Goal 2: The patient has surgery on the day after admission and returns to the ward with a clear treatment plan that means they are well enough to get out of bed, free of delirium, and eat a normal meal the next day.

Goal 3: The patient has returned to their previous residence and is receiving ongoing assistance to continue with bone-strengthening therapy in order to prevent future fractures; as a result, their hospital experience may be used to enhance the treatment of other patients in the future.

In line with a national effort, ED and orthopedic teams should run the short local audit, described in the Royal College of Emergency Medicine 2023 report, to review how they manage common problems such as pain, dehydration, and pressure ulcer prevention. By ensuring these standards are in place, the results will improve the clinical outcomes of the patients [8].

II. Aims and Objectives

This local audit aims to capture the level of adherence to the Royal College of Emergency Medicine (RCEM) treatment tool for common problem management at the ED. The report shows to what extent best practice is implemented in the management of common problems of patients with hip fractures presenting to the ED and identifies the areas where improvements are needed.

Ensuring complete adherence is expected to support the goal of the "patient having surgery by the day after admission and returning to the ward with a clear treatment plan that means they are well enough to get out of bed, free of delirium, and eat a normal meal the next day (RCEM goals) [8].

III. Methodology

Clinical audit is a cyclical process, as shown in Figure 1.

Planning the Audit

This audit was conducted as part of the quality improvement project to enhance the prompt management of patients presented to the ED with hip fractures. It was a retrospective conducted from October to November 2024 at the Emergency Department of the Royal Preston Hospital, Lancashire Teaching Hospital Foundation Trust. Firstly, the audit was registered in the Audit Management and Clinical Effectiveness Improvement Department's database at the hospital [7]. The guidance for handling the software was provided through the e-learning module, and further mentoring support was provided till the implementation level of the audit study.

Fig. 1: Clinical audit is a cyclical process

The Audit tool was already available, designed in line with the Royal College of Emergency Medicine (RCEM) standards and best practices, and is named the Hip Fracture Treatment Tool. Table I shows the RCEM tool [8].

TABLE I. HIP Fracture Treatment Tool (RCEM)

Criteria/ Standard	Definition
1. Provide pain relief (Analgesia)	Record if any type of analgesia, including a nerve block, was given or offered in the ED or before arrival (e.g., by GP or ambulance staff). Entonox is not included as it doesn't always provide adequate pain relief, and its effects are very short-lived.
2. Screen for delirium	Record the result of the 4AT (out of 12) if this was carried out in the ED
3. Use an Early Warning System (EWS)	Record the result of the EWS if this was carried out in the ED. EWS Early Warning Signs
4. Carry out standard blood tests	Record whether blood samples were taken in the ED, e.g., Full Blood Count, Urea & Electrolytes, etc.
5. Assess the risk to pressure areas	Record whether a pressure area inspection was clearly documented as carried out in the ED. This can include a visual inspection or a formal assessment tool such as the Waterlow Score
6. Commence intravenous fluid (IV) therapy	Record whether IV fluids were clearly documented as being started in ED (or before arrival in ED). If it is clinically not appropriate for a patient to receive IV fluids, this should be documented in the patient's notes by medical or specialist nursing staff.
7. ECG carried out	Record whether the patient had an ECG carried out in the ED

Administrative and ethical clearance

Participation in the National Hip Fracture Programme is a mandatory requirement for annual registration of the Trust. Conducting this audit formed part of the national audit programme's compliance process. The audit was carried out

utilizing the RCEM Best Practice Tool, in collaboration with the Audit Management and Clinical Effectiveness Improvement Department of the Trust. The study was based exclusively on secondary data extracted from existing patient records, with no direct interaction with human participants; therefore, formal ethical approval was not deemed necessary, in accordance with the Health Research Authority (HRA) guidance for clinical audits [9].

All stages of the audit adhered strictly to the Trust's data protection, confidentiality, and information governance policies, consistent with the General Data Protection Regulation (GDPR), the Data Protection Act 2018, and the Caldicott Principles [10]. Measures were taken to ensure that patient-identifiable information was handled securely, anonymized where appropriate, and used solely for the purpose of service evaluation and quality improvement, as outlined in RCEM audit standards and NHS guidelines on clinical audit governance.

IV. Data Collection And Analysis

Data for this audit were collected retrospectively by accessing the electronic health records of patients who presented with hip fractures to the Emergency Department (ED) between July 2024 and September 2024. A total of 75 patient records were reviewed using the Harris Flex system, which serves as the Trust's electronic patient record (EPR) platform. Each case was evaluated against the established clinical criteria outlined in the RCEM treatment tool for hip fracture management. Relevant data were systematically extracted and documented using a structured Excel spreadsheet. This approach enabled a detailed assessment of adherence to best practice standards and facilitated the identification of gaps or delays in care delivery.

Data were analysed by comparing them with the standards mentioned in the RCEM tool and presented using descriptive statistics. Results were presented in percentages on Table II.

TABLE II. Summary of audit results

Standard	Target	Results
Analgesia offered in the ED	100%	98.6%
ECG was carried out in the ED	100%	92%
Blood samples were taken at the ED	100%	98.6%
Pressure Ulcers recorded at the ED	100%	93.3%
*IV Fluids were started at the ED	100%	82.6%
EWS score recorded in the ED	100%	97.3%
Delirium screening in the ED	100%	76%

* Even though they started IV fluids at the ED or withheld the IV fluid administration, no clear documentation was available.

V. Results

Providing analgesics by the GP, ambulance staff, or at the ED, along with conducting standard blood tests at the ED, showed the highest adherence to standards (98%). Recording the EWS score (97%), pressure ulcer documentation (93%), and ECG conduction at the ED (92%) also demonstrated good compliance. Starting IV fluids at the ED had a lower adherence rate of (82%). There was inadequate documentation regarding IV fluid administration. When IV fluids were given, the details were often not clearly recorded. Additionally, in cases where IV fluids were not administered, the reasons for withholding them were not documented. This lack of clarity and completeness affects the quality of clinical information, which hampers accurate decision-making and continuity of care. Delirium screening at the ED scored the lowest (76%), showing the least adherence to standards.

VI. Conclusion

Fairly good compliance was observed in offering analgesia, recording Early Warning Scores (EWS), documenting pressure areas, obtaining blood samples for investigations, and performing ECGs at the Emergency Department (ED). However, initiation of IV fluids at the ED showed relatively lower compliance at 82.6%. While it is possible that there was a clinical rationale for not administering fluids in some instances, this was not clearly documented. Proper documentation is essential and must be strictly adhered to in all cases to support safe and effective clinical decision-making. The lowest compliance was noted in conducting delirium screening at the ED (76%), indicating this as the most critical area requiring immediate improvement.

VII. Learning

Adhering to the criteria outlined in the treatment tool will facilitate effective planning for patient management in the Emergency Department (ED) and contribute to achieving the Royal College of Emergency Medicine (RCEM) goals.

Given the high-pressure environment of the ED, recording detailed information can be challenging; however, ensuring accurate documentation is crucial for achieving satisfactory patient outcomes.

In the context of intravenous (IV) fluid administration, if clinical indications do not warrant its use, documenting the rationale for withholding IV fluids will enhance the comprehensiveness and clarity of patient records. This practice supports better communication, continuity of care, and overall quality of treatment.

Recommendations

- Discuss the findings of this audit at the monthly quality improvement meeting at the ED and share with the relevant staff.
- Identify the possible reasons for lagging areas and measures to be improved
- Priority should be given to strengthening the Delirium screening.
- Commencement of IV fluid at the ED should be recorded. When it is not indicated due to clinical conditions, the rationale should be recorded.
- Even though other criteria scored >90%, further improvement is needed to achieve the 100% target.
- Reaudit to review the progress after implementing the quality improvement project addressing the low adherence area.

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