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Improving Emergency Department Care and Treatment for People with a Hip Fracture

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Developing national standards to drive Quality Improvement in hip fracture care - A collaboration between the Royal College of Emergency Medicine (RCEM), Public Health Scotland and national clinical audits in the UK and Ireland.

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Introduction

Hip fracture is the most common, serious injury in frail and older people presenting to the Emergency Department (ED). Each year in the United Kingdom and Ireland, over 75,000 will suffer a hip fracture. Diagnosis is usually made promptly making hip fracture the ideal model with which to examine the quality of the care provided to frail and older people.

Royal College of Emergency Medicine (RCEM)

The RCEM ran seven national audits on hip fracture care between 2003 to 2018. The previous clinical standards for these audits were developed from the National Institute for Health and Care Excellence (NICE) guidance on hip fracture (CG124) and expert consensus. They focused mainly on pain assessment, analgesia delivery and radiological confirmation of hip fracture (Table 1).

Table 1 Previous RCEM standards for 'fractured neck of femur' care

Standard
1. Pain score is assessed within 15 minutes of arrival 2. Patients in severe pain should receive appropriate analgesia in accordance with local guidelines a. 50% within 20 minutes of arrival or triage, whichever is the earliest b. 75% within 30 minutes of arrival or triage, whichever is the earliest c. 100% within 60 minutes of arrival or triage, whichever is the earliest 3. Patients with moderate pain should receive analgesia in accordance with local guidelines a. 75% within 30 minutes of arrival or triage, whichever is the earliest b. 100% within 60 minutes of arrival or triage, whichever is the earliest 4. 75% or patients should have an x-ray within 120 minutes of arrival or triage, whichever is the earliest 5. 90% of patients with severe or moderate pain should have documented evidence of re-evaluation and action within 30 minutes of receiving the first dose of analgesic 6. 95% of patients should be admitted within 4 hours of arrival

In 2018 the RCEM transitioned from a national audit programme to a national Quality Improvement programme (QIP). They ran the 'fractured neck of femur' (NOF) QIP in 2020/21 retaining the previous standards from the national audits.

Key findings from the 2020/21 QIP demonstrated:

- 49% of patients had their pain assessed on arrival at hospital within 15 minutes
- 15% of patients had received appropriate analgesia for their pain within 30 minutes
- 56% of patients had received an X-ray within 90 minutes
- Number of EDs that have a NOF lead increased from 51% to 70%
- Proportion of departments with the necessary equipment/trained staff to perform a nerve block increased from 93% to 99%
- Pain assessment within 15 minutes was the only standard to show improvement over the course of the QIP

Recommendations were made at local, organisational, national and RCEM levels to improve achievement of the standards and the new national QIP programme. At a national level the report recommended alignment of ED standards between the RCEM and the established national hip fracture audits in the UK and Ireland to create a new suite of standards.

By actively recruiting RCEM committee members from all nations, there was an increased awareness of the existing mandatory national clinical audits across the UK and Ireland. The RCEM, National Hip Fracture Database (NHFD), Irish Hip Fracture database (IHFD) and Scottish Hip Fracture Audit (SHFA) agreed that it would be sensible to collaborate to provide a unified approach to developing the new ED standards. Rather than run occasional 'sprint' audits of the RCEM standards it would be useful to build on the ED data already captured by the relevant national clinical audit.

National Hip Fracture Database (NHFD)

The NHFD is the national clinical audit for England, Wales and Northern Ireland. Annually it reports data on nearly all patients who sustain a hip fracture in these countries (60,000, 4,000 and 2,200 over 60-year-olds respectively). The NHFD has never specifically examined the ED element of these patients' care since this would have duplicated the RCEM's own audits.

However, the NHFD report on 2021 introduced a key performance indicator (KPI0) that seeks to ensure that patients are rapidly admitted to an appropriate orthopaedic or orthogeriatric bed, and that they receive a nerve block to ease their pain in the pre-operative period. The combination of these was achieved for only 11% of all patients in 2021 (Figure 1), and live reporting on the NHFD website shows that this figure fell to just 7% in the first half of 2022.

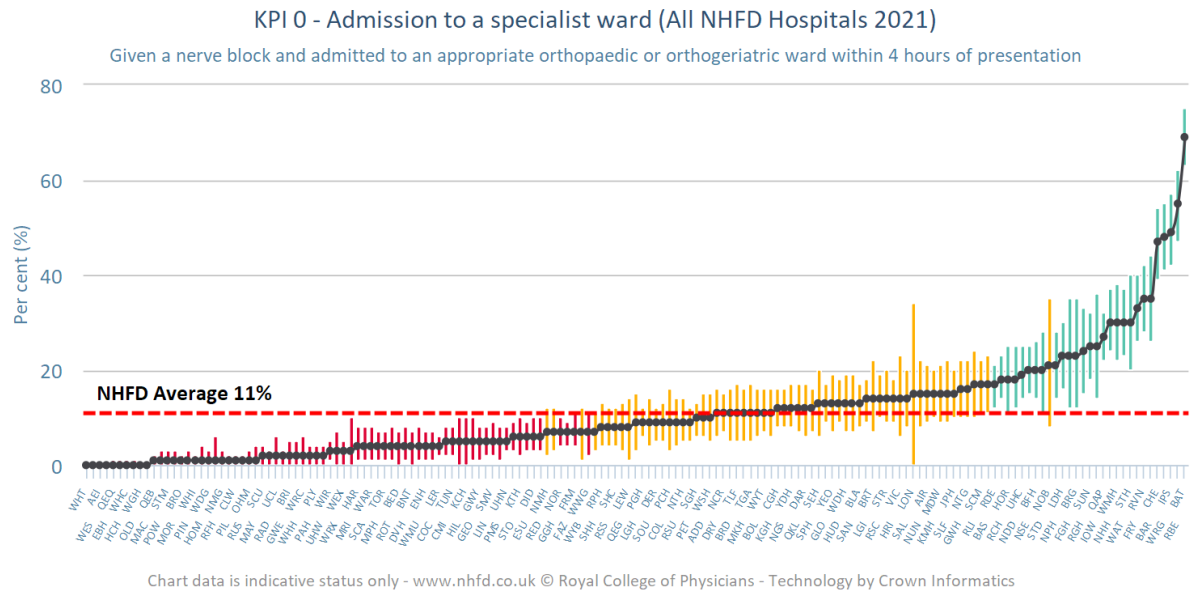

Figure 1 Variation in delivery of both prompt admission and pre-operative nerve blocks in different hospitals in England and Wales in 2021

Irish Hip Fracture Database (IHFD)

The IHFD takes a similar approach, specifically examining their care against seven standards. Standard 1 requires that patients are admitted from the ED to an orthopaedic ward or to the operating theatre within 4 hours. Performance has increased from 11% in 2017 to 26% in 2021. The report also shares that since its introduction to the dataset, pre-op nerve block administration in the ED or ward before arrival to theatre, has increased by 15% to 75% of people with hip fracture.

Scottish Hip Fracture Audit (SHFA)

The SHFA also promotes a similar pathway of care, from the ED to an Orthopaedic ward within 4 hours of arrival. However, unlike the other national audits, the SHFA does examine ED care and the standards are endorsed by the Scottish RCEM.

The SHFA specifically look at six elements of an ED care bundle known as the 'Big Six' bundle (Figure 2). This bundle ensures the provision of appropriate analgesia (fascia iliaca block unless contraindicated), investigations (blood tests/ECG), delirium assessment, early warning score, intravenous fluids commenced in the ED, and pressure area care. The SHFA advocates a multi-disciplinary team approach to achieving the Big 6 in the ED.

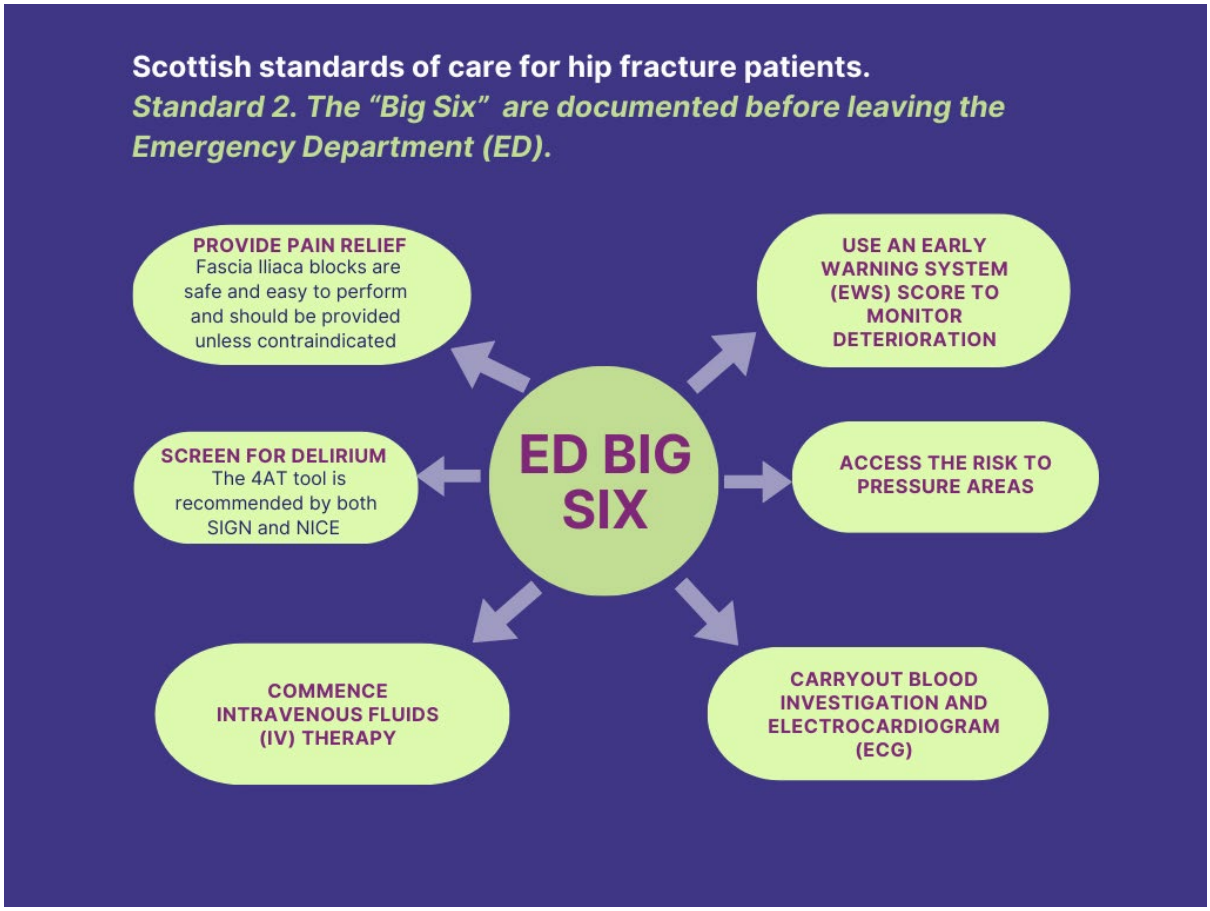

Figure 2 SHFA ED Big 6

The SHFA report on 2021 showed that patient's time in ED had increased in 2021, with 6 of every 10 patients admitted within 4 hours of arrival, compared with 8 in 10 in 2020. The full Big Six bundle of ED care was achieved in 48% of patients, a slight increase from 46% in 2020.

Embedding the Big Six within Scottish EDs is a process supported by education and better documentation practices which has taken place over several years. Though some elements are now consistently approaching 100% completion, achieving all six elements of the bundle together to meet the full standard can be challenging. Despite this, the audit has found steadily improving performance even in the less well completed elements such as delirium assessment and pressure care. Local QI work focuses on increasing the number of patients receiving the Big Six bundle of care.

New ED Standards & Benchmarking

Standard 1

'Patients are admitted from the ED to an Orthopaedic bed within 4 hours of arrival.'

Across all five nations, ED teams should benchmark the time in which patients are moved to an Orthopaedic bed. This should be done using data collected by their national clinical audit since these provide a clear metric with which all parties can examine a crucial aspect of care quality, and one which appears to be deteriorating in the face of increasing system pressures.

Standard 2

'Patients who have a clinical suspicion or confirmation of a hip fracture have the Big Six interventions/treatments before leaving the ED.'

It is recognised that people who sustain a hip fracture are usually very frail and clinically compromised. The aim should therefore be to optimise care through early proactive interventions and treatments.

By ensuring that vital signs (NEWS), bloods and ECG are taken, commencement of IV fluids, pain is managed, signs of delirium is identified using 4AT and pressure areas checked, results in improved clinical outcomes[1]. The rationale for each component can be found in Appendix 1.

ED's within Scotland can visualise their monthly performance via the SHFA. ED's out with Scotland can use the SHFA operational definitions to audit their current performance. An Excel data collection sheet using these definitions has been developed to support departments to do this and can be accessed via the RCEM website.

Departments will be able to benchmark themselves against the Scottish ED performance using the annual SHFA report. The SHFA have committed to developing their report to show the breakdown for each constituent part of the Big Six as well as all parts combined as currently reported (Figure 3).

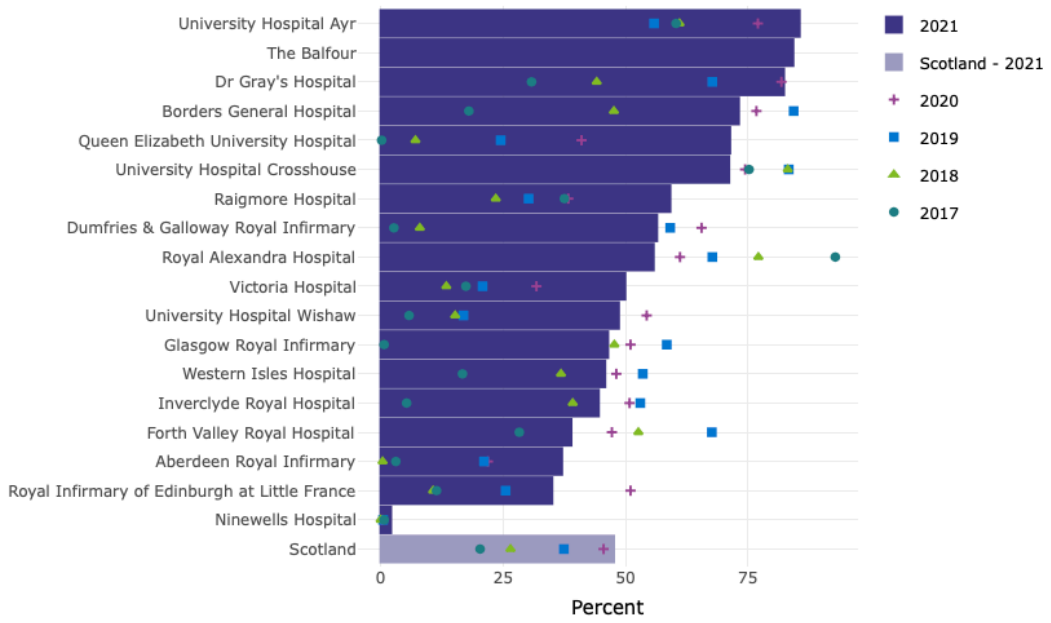

Figure 3 Standard 2 Big 6 attainment for 2021 compared to 2017-2020

Conclusions

RCEM audits and improvement initiatives have highlighted the need for continuing improvement in the care of people with a fractured hip. A collaborative approach between RCEM and national hip fracture audits is a major step forward in this process. Achieving consensus across the five nations on the standards discussed will help Emergency Department's audit their practice and drive improvement.

Even in times of severe pressures within the NHS, these standards have been shown to be both cost effective and improve care and outcomes for people with hip fracture[1]. The collaborative advocates a multi-disciplinary team approach to achieving the Big 6 in the ED.

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Declarations of interest

There are no other declarations of interest.

Disclaimers

The College recognises that patients, their situations, Emergency Departments and staff all vary. This guideline cannot cover all possible scenarios. The ultimate responsibility for the interpretation and application of this guideline, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

Acknowledgements

Scottish Hip Fracture Audit
National Hip Fracture Database
Irish Hip Fracture Database

Evidence

Where evidence is available it has been appraised using standard methods. Where evidence does not exist to guide recommendations consensus expert opinion has been used.

Audit standards

Standard
Patients are admitted from the ED to an Orthopaedic bed within 4 hours of arrival
Patients who have a clinical suspicion or confirmation of a hip fracture have the Big Six interventions/treatments before leaving the ED - Provide pain relief - Screen for delirium - Use an Early Warning System (EWS) score to monitor deterioration - Carryout blood investigation and electrocardiogram (ECG) - Assess the risk to pressure areas - Commence intravenous fluids (IV) therapy

References

1. Farrow L, Hall A, Wood AD, Smith R, James K, Holt G, Hutchison J, Myint PK. Quality of Care in Hip Fracture Patients: The Relationship Between Adherence to National Standards and Improved Outcomes*. J Bone Joint Surg Am.* 2018 May 2;100(9):751-757. doi: 10.2106/JBJS.17.00884. PMID: 29715223.]

Appendix 1: Rationale for the Big Six

Provide pain relief: all patients who sustain this painful injury must be offered adequate analgesia. In many cases opioid analgesia will have been provided by ambulance staff pre-hospital. Fascia iliaca blocks are safe and easy to perform and should be provided unless there are contraindications.

Screen for delirium: The 4AT (further info at www.the4AT.com) is the tool recommended by NICE and SIGN for delirium detection. Screening for delirium in the ED allows early care including identifying causes and managing distress, and if negative also provides a valuable baseline measure allowing for identification of deterioration during the patient's hospital stay. The presence of delirium has implications with respect to the informed consent process and the patient's capacity should be formally assessed and documented.

Use an Early Warning System (EWS) score to monitor deterioration. Physiological disturbance including hypotension and hypoxia are common in hip fracture patients. This can be because of acute conditions that have triggered the fall, or if the fall has led to a long lie.

Carryout blood investigation and electrocardiogram (ECG). Electrolyte abnormalities, anaemia and arrythmias are common in the hip fracture patient. A coagulation screen does not necessarily predict operative bleeding complications and may only be required in patients taking warfarin. Further tests may be required depending on clinical circumstances.

Assess the risk to pressure areas. Hip fracture patients are at high risk of developing pressure sores early management of at risk pressure areas while examining the patient front and back reduces harm and improves patient comfort.

Commence intravenous fluids (IV) therapy. Hip fracture patients are very commonly dehydrated at hospital attendance because of blood loss into the fracture site, fluid loss from concurrent medical conditions such as sepsis, and dehydration caused by lack of consumption of fluids and nourishment following the injury. Elderly frail patients may not exhibit typical physiological responses such as tachycardia or hypotension, and as a result, inadequate resuscitation is common. Resuscitate with fluids as required, and in all patients, even those not apparently requiring resuscitation, provide maintenance intravenous fluids. This has been shown to reduce the risk of pre-operative dehydration and complications such as acute kidney injury.

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