Advancing Quality (AQ) hip fracture programme: A large scale programme to improve nutritional assessment in people with hip fractures

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ABSTRACT

Introduction: Advancing Quality (AQ) has high reliability and is effective at reducing unwarranted variation in care programme operated by the Advancing Quality Alliance (AQuA). Established in 2008, AQ aims to support NHS healthcare organisations to improve the reliability of clinical practices so that every patient consistently receives the highest quality care possible, every time. Our work with dedicated clinical teams and managers aims to improve health outcomes for patients and the population whilst reducing unwarranted variation in highly prevalent conditions.

Methods: The population is identified retrospectively using ICD1-0 codes and a standardised data collection tool is used to assess management of people > 60 years of age with a HFR, either on arrival to hospital or during their admission.

Results: 7317 patients had a nutritional screen recorded using the MUST score between January 2015 and December 2016. In hospital mortality for patients receiving nutritional screen within 24 h was 6.1% compared to 9.3% for screens after 24 h, $p < 0.001$ (Fisher's exact test). Mortality rate for those patients without a risk score recorded was 9.4%.

The number of patients receiving nutritional screen within 24 h, improved from 86% to 94%.

Conclusion: Inpatient mortality was significantly lower in patients who had their MUST score within 24 h of admission. This is likely attributed to the improvement of the overall package of care if their assessment is performed early in those patients who are admitted to an orthopaedic or neck of femur ward. An early MUST score identifies nutritional deficiency and those at risk allowing measures can be taken to address malnutrition early during the inpatient stay.

1. Background

The incidence of hip fracture is increasing within the elderly population and this is associated with increased dependency, disability and mortality.¹ Functional recovery after a patient sustains a hip fracture is an important issue. Returning to pre-morbid functional capability after a hip fracture is impaired to 30–60% of the elderly population.^{1–3}

Malnutrition is an important health problem globally but particularly in the elderly. There is a direct association with lower quality of life, morbidity and mortality.³ Malnutrition is complex as are the causes. It is certainly widely seen in patients with chronic disease including respiratory, stroke and surgical patients. The effect of ageing also has a combined negative impact on nutrition as a result of social and environmental changes, cognitive and physical decline.⁴

Nutrition and malnutrition are broad terms with no clear definition

and consequent variation between disciplines, institutions and culture. Under-nutrition and malnutrition are often used to mean the same thing. The definition of under-nutrition is a state of energy, protein or specific nutritional deficiency.⁵ Consequently low protein intake can compromise the normal architectural anatomy of bone contributing to hip fracture. Nutritional requirements after a hip fracture and trauma are often elevated, as is energy expenditure. As a result of this, nutritional deficiency may be further exacerbated.

Annually there are 75,000 hip fractures with an annual cost (including medical and social care) for all UK hip fractures cases around £2 billion (NICE 2011).⁶ Mortality associated with hip fractures is 8–9% in the first month and 30% at one year. Most of these deaths are due to medical co-morbidities rather than the fracture itself. This highlights the importance of the multidisciplinary team with hip fracture patient management (NICE 2011).

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based National Health Service (NHS) health and care quality improvement organisation.⁷ AQUA is at the forefront of transforming quality and safety of healthcare. Established in 2010, with the aim of supporting its members to deliver the best quality of care, wellbeing and health for all. Advancing Quality (AQ) is a high reliability programme to reduce unwanted variation in hip fracture patient care operated by AQUA.⁷ Dedicated work with clinical teams and managers aims to improve patient care and consistency every time for every patient.

The National Hip Fracture Database (NHFD) is a clinically lead, web-based audit of hip fracture care managed by the Royal College of Physicians (RCP).⁸ This developed from collaboration between the British Orthopaedic Association and the British Geriatrics Society. The NHFD began collecting data in 2007. The NHFD collects all data about a patient's admission surgical and medical care as well as discharge information. Key elements of the best practice tariff (BPT), initiated by NHS England and NHS Improvement, aim to improve patient care. The criteria identified as important in improving quality and outcomes of care after hip fracture. The components of the BPT usually have a time frame associated with them for the trust to achieve the tariff. NHFD has been instrumental in championing improved care for patients with fractured neck of femur. Mortality has reduced from 8.4% in 2012 to 6.9% at 30 days.⁸ The 2017 changes to the Best practice Tariff is shown in Table 1.

The National Hip Fracture Database also has national guidelines for the management of hip fracture patients. These guidelines in 2017 outline that a nutritional assessment should be performed in hip fracture patients during their admission, however, as per many of the other criteria there is no specific time attached to this.

There are 10 components to the AQ hip fracture (HFR) measure set (Table 2).⁷ Measure set 08 is that a hip fracture patient should have a nutritional assessment with 24 h of admission using the malnutrition universal screening tool (MUST).

The aim of the study was to identify if there is a difference in hip fracture patient mortality if patient who had a nutritional assessment within 24 h.

2. Methods

The population was identified retrospectively using ICD-10 codes and a standardised data collection tool. Patients over 60 years of age with a hip fracture either on arrival to hospital or during their admission were included. The AQ hip fracture measure set was developed and launched in October 2014 with a 3-month data collection period to allow implementation. From January 2015 onwards performance was measured against an Appropriate Care Score (ACS) for the patients' receiving all eligible measures. The measures are consistent with recommendations from NICE.

Since 2015, over 10,000 patients across the North West have been treated against the AQ hip fracture measure. This analysis specifically looks at patient care and outcomes in relation to Hip fracture measure set 08: Nutritional Screen within 24 h of arrival at hospital or from

Table 1
Change in Best Practice Tariff Criteria.

2017 Change to Best Practice Tariff 8
Time to surgery within 36 h of presentation
Assessed by a geriatrician within 72 h
Preoperative cognitive test using AMT score
Assessment for bone protection
Specialist falls assessment
New criteria since 2017
Nutritional assessment on admission
Postoperative delirium assessment using the 4AT tool
Assessed by a physiotherapist on the day or day after surgery

Table 2
2 -AQ Hip Fracture Measure Set.

AQ Hip Fracture Measure Set	
HFR-01	Validated pain score assessment & analgesia < 60 min of arrival
HFR-02	Admission to an appropriate Orthopaedic or Orthogeriatric ward within 4 h of arrival
HFR-03	Jointly agreed protocol started within 6 h of arrival
HFR-04	Pressure ulcer assessment within 6 h of arrival
HFR-05	Consultant/senior staff supervision during surgery
HFR-06	Documentation in post operative note that patient should mobilise full weight-bearing
HFR-07	Physiotherapy assessment within 24 h of surgery
HFR-08	Nutritional screen within 24 h of arrival
HFR-09	Referred to Early Supported Discharge – data collection only
HFR-10	Known to fracture liaison service – data collection only

diagnosis if an in-patient fracture. As part of this measure all participating organisations submit a malnutrition score based on a validated screening tool, providers used the Malnutrition Universal Screening Tool (MUST). The score is recorded as low, medium and high. In hospital mortality was also recorded for the same time period.

3. Results

Results are available for 7317 patients in the hip fracture measure set 08 from all participating organisations from January 2015 to December 2016. MUST score was similar between those patients who had their score done within 24 h and over 24 h. The MUST score is divided into low, medium and high (Table 2). During the data collection time period, the numbers receiving the MUST score within 24 h improved from 86% to 94% (Graph 1). The mortality rate for those receiving a MUST score within 24 h was 6.1% compared to those being screened after 24 h was 9.3%. Using fishers exact test this shows statistical significance of $p < 0.001$. Mortality for those without a risk score recorded was 9.4%.

4. Discussion

A previous study has shown up to 56% of patients with hip fracture were malnourished on admission or developed serious nutritional deficits while hospitalised compared with only 2% of those in the community.⁹ Malnutrition can be further exacerbated by a long delay for surgery, prolonged starving while awaiting surgery, pain, nausea and vomiting. Surgery creates a catabolic effect, which, combined with malnutrition leads to muscle wasting, which will impair rehabilitation, prolong length of hospital stay with increased morbidity and mortality.¹⁰

In the NHFD BPT criteria, there is no guidance on the nutritional screening tool. There are a variety of assessment tools available and there is no clear guidance as to which is superior. The AQ measure set uses MUST that has been shown in the literature to have good reliability and validity. The aim of nutritional assessment is to identify those patients who are malnourished or at high risk of malnourishment. Currently evidence suggests that inpatient mortality is higher among those who are malnourished.¹¹ This further supports prompt identification and management of nutrition. This is evidenced by the results of our study showing the in-patient mortality of 6.1% in those with a MUST score within 24 h of diagnosis compared to 9.3% in those with a MUST score after 24 h. The exact reason for this is unclear. The suggestion is that in those patients who are admitted to an orthopaedic or neck of femur ward are more likely to have the MUST score completed and the overall package of care is superior. Following on from this, an early MUST score identifies nutritional deficiency and those at risk. Consequently measures can be taken to address malnutrition pre-operatively and reduce the risk of deterioration during admission.

5. Conclusion

The NHFD has been instrumental in improving the overall package of care of hip fracture patients and giving this vulnerable patient group an improvement of care. The BPT criteria changes depending on deficiencies identified and we propose that the MUST score should be performed within 24 h and this is included in the BPT.

Declaration of interest

None.

Conflicts of interest

Miss Thorpe is involved in the co-ordination of the AQ measures.

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