

Bone fractures and nutrition

The British Association of Parenteral and Enteral Nutrition (BAPEN) recommend that all hospital in-patients should have nutritional screening, and this also applies to those with bone fractures. Preventing and managing malnutrition is an important aspect of managing bone fractures and promoting healing. This study completed the audit cycle, assessing rate and type of nutritional screening in patients admitted to a district general hospital with bone fractures and comparing outcomes once the nationally recommended Malnutrition Universal Screening Tool (MUST) tool was brought in.

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Promotion of nutritional screening and education on the Malnutrition Universal Screening Tool (MUST) has improved rates of nutritional screening in patients with bone fractures and increased rates of dietician input. However, although further improvement is still needed locally, the results of this study could be translated nationally to highlight the importance of such screening and the benefits to patients of appropriate nutritional care.

Background

Malnutrition is defined as “a state in which deficiency of energy, protein and/or other nutrients causes measurable adverse effects on tissue/ body form, composition, function or clinical outcomes.”¹ It increases vulnerability to ill-health, and can lead to infections, delayed wound healing, effect the function of heart and lungs and cause muscle weakness and depression.¹ Evidence shows that malnutrition is common in patients both in the community and hospital settings and hence can have a negative

effect on the health and healing of many patients.

Patients with bone fractures are affected by malnutrition in two ways. Malnourishment can lead to a reduction in calcium and other minerals intake and thus increase risk of osteoporosis, which in turn increases risk of (low impact) fractures.² In addition, any person with a fracture who is malnourished may have reduced bone and soft tissue healing, reduced muscle strength and a longer rehabilitation and be more vulnerable to infection.¹

The NICE guideline states that all patients admitted to hospital should be assessed for nutritional status and treated accordingly. This is preferably by using anthropometric measurements, such as weight and height. NICE states that the main reasons for having developed guidelines on nutritional assessment and management are:

1. Malnutrition is common
2. Malnutrition increases vulnerability to ill-health
3. Decisions involving nutritional support are complex

4. Understanding of malnutrition and nutrition support amongst healthcare professionals is poor.

Audit 2010–2011

Aims and objectives

This audit sets out to measure how well the national guideline on nutritional assessment of patients is carried out with respect to patients with bone fractures.

- Do 100% patients admitted to Trafford General Hospital in November-December 2010 with bone fractures receive nutritional assessment?
- Do these patients receive care appropriate for their nutritional status?
- Are the outcomes (healing and mobilisation of limb) better for those with appropriate nutritional assessment and care than those without?

Methods

19 male and 21 female patients admitted to Trafford General Orthopaedic ward during October–December 2010 with a fractured

bone were audited. The cases and paper notes were found by the Trafford General Hospital audit and equality department. A framework was used, to assess both the patient's paper and electronic hospital notes. In summary, the areas of assessment were:

1. Type of nutritional assessment tool used if any?
 - a. Weight/height measured on admission?
2. Medical/dietician input into management regarding malnutrition?
3. Outcome
 - a. Weight loss/gain on discharge?
 - b. Mobilisation of joint at three months?
 - c. Adverse events?

Results

47% males and 62% females had nutritional risk assessment screening tool, and 53% male and 38% female had no nutritional screening. 68% males and 48% females had no weight recorded on admission. 14% females had recorded weight loss, but 100% males and 86% females had no weight change recorded. Weights recorded ranged from 45 to 90 kilograms.

Discussion

A total of 54.7% patients audited had the Nutritional Assessment Risk Screening Tool carried out. Although two patients (both female) had a weight below 54kg, no patients audited had their height recorded to calculate Body Mass Index. Even though 54.7% all patients had the nutritional screening, 58% total patients had no weight recorded. This shows that although the screening tool was used, it was not used appropriately since weight was often not recorded on it.

Three female patients had recorded weight loss during hospital admission. However, although there was some medical management for these patients, 0% patients audited had dietician input. This shows that the nutritional assessment in place at the time was not carried out effectively, nor were appropriate measures taken to manage patients with recorded weight loss and potential malnutrition.

Adverse events during admission included refeeding syndrome and swallowing difficulties. Medical management included intravenous replacement of minerals and nasogastric feeding. However, with such a small percentage of patients being weighed or effectively nutritionally assessed, we cannot ascertain the association of outcome for fracture healing and functional recovery with nutritional status and management.

A major limitation in assessing weight in patients with bone fractures is mobility. Any lower limb fracture can potentially stop the patient weight bearing, and hence would make weighing the patient more difficult as a harness system would need to be used. Guidance on alternative measurements in such instances may improve the numbers of patients with recorded weights.

It was also noted that although weights may have been recorded they were sometimes not true measurements on admission but an estimation of weight according to patient statement.

Conclusion

Therefore, in November–December 2010 only 54.7% patients with bone fractures admitted to Trafford General Hospital orthopaedic ward had a nutritional status assessment. Although only a total 7.5% of all

patients had recorded weight loss 58% had no weight recorded at all and 0% had dietician input into management.

Recommendations and action plan

1. Education regarding importance of nutritional assessment and management in all patients, and especially with regarding to healing and infection control.
2. Encourage use of MUST screening tool³: includes alternative measurements and clinical and self-assessment of weight loss as a method to ensure all patients receive appropriate management if at risk of malnutrition.
3. Improve uptake by introducing BMI charts in all the notes and integrated MUST screening as part of orthopaedic proformas
4. Repeat audit to see whether the above have had any effect.

Re-audit 2011–2012

Introduction

As recommended by audit 2010–2011 and BAPEN, use of MUST was encouraged for nutritional screening on the orthopaedic ward.

Aims and objectives

- Has there been an improvement in percentage patients admitted to Trafford orthopaedic ward with bone fractures receiving nutritional assessment in 2011 compared to 2010? Have we achieved 100% screening as per national guidelines?

- Has there been an improvement in patients receiving appropriate care for malnutrition or weight loss?
- Are outcomes better for those with appropriate nutritional assessment in 2011?

Methods

24 male and 26 female patients admitted to Trafford General Hospital's orthopaedic department with a bone fracture between October 2011 and December 2011 were audited. A similar framework as the original audit was used. However, since there was more than one type of nutritional screening tool, the outcomes were compared between the different screening methods in order to ascertain which tool, if any, led to more appropriate care and better outcomes.

Results

In 2011–12 80% patients admitted to Trafford General Hospital orthopaedic unit with bone fractures had a nutritional screening assessment, 21.5% had weight loss recorded and of these 54.5% had dietician advice. 8% (4/51) patients had adverse events, and of these only one patient had recorded weight loss and dietician input.

Discussion

A higher percentage of those screened with MUST had weights recorded on admission than with nutritional risk assessment screening or no screening. The latter had weights recorded on observation charts. This may be because MUST screening emphasises the need for weight and weight changes to be recorded. Body mass indices are also used, but these have not been included in this audit for continuity.

In addition, a larger percentage

of those screened with MUST had a weight change recorded than with the nutritional screening risk assessment score. Lack of screening led to unknown weight changes. "No weight change recorded" indicated there was one or no weight recorded in the notes.

More patients with weight loss were appropriately managed when screened by MUST than with no screening or nutritional risk assessment, where many patients with weight loss had no management at all. Although medical management of those with weight loss was investigated, no documentation of this was recorded, other than provision of bone protection which was not related to weight changes.

Adverse events

Adverse events were classified as an event causing readmission within one month, acute medical/surgical management or death.

Three patients suffered adverse events who had nutrition assessment risk screening. None of these patients had recorded weight loss or gain. The adverse events included: constipation and bowel perforation, readmission with heart failure within one month of discharge and death by pneumonia. These all may have been linked to malnutrition but since there is no record of weight change it is unclear whether these patients would have benefited from management of nutritional status.

One patient who was screened using MUST was readmitted with aspiration pneumonia less than one month after discharge. However, this patient did have a weight loss recorded and was seen appropriately by a dietician and followed up in the community.

Of those not screened, there

were no adverse events. This may be explained by the type of patients who were generally not screened. These included day cases, younger patients and non-fragility fractures, who were less likely to suffer from malnutrition. However, since many of this cohort were short admissions, it is also likely that there is a lack of information about any adverse events that did take place.

Conclusion

MUST appears to be a more effective screening tool which emphasises the need for weights and changes in weight to be recorded for appropriate management of nutrition to take place. Further work needs to be undertaken to improve the uptake of MUST as a screening tool and improve the percentage of patients with recorded weight changes and appropriate management of their nutritional status.

Discussion

In 2011 a higher proportion of patients had nutritional screening and general dietician advice than in 2010. There were fewer patients with no weight recorded. Therefore, the screening and management of nutritional status has improved and outcomes are improving.

In 2011, 41.5% patients still had no weights recorded, indicating many assessment tools were being undertaken incorrectly. There were still 67% patients with no weight change recorded, which would make detection of weight loss and appropriate management difficult. However, there was an improvement in overall weights and weight change recorded and hence appropriate medical or dietician action taken accordingly.



The audit could be improved by limiting patients included to those admitted for more than 24 hours or those with fragility fractures. The period audited could be longer and a larger number of patients could be included to make the results more accurate (sensitive).

Conclusions

1. There was an increase in rates of nutritional assessment
2. There were more patients with recorded weight loss: therefore less may have been going unrecorded and untreated
3. There was a reduction in patients with no weights recorded
4. There was a reduction in patients whose weight change was unrecorded or unknown
5. There was an increase in patients receiving dietician advice
6. There was a slight decrease in adverse events: however, until

the target 100% patients have been screened and weight change recorded this cannot be attributed to improvement in nutritional screening and management..

Therefore, introducing the MUST and educating ward staff about nutritional screening has had a beneficial effect on improving rates of screening. Continuing education and mandatory use of MUST screening within 24 hours of every admission will continue to detect patients at risk of malnutrition and improve their care. The effect of this on fracture healing and outcomes in patients with bone fractures is still unclear, and further research or audit would be beneficial.

Although this audit has been carried out in a small local district general hospital, the outcomes could be applied to similar hospitals nationally. Nutritional screening has proven benefits,¹ which can be improved by aiming to achieve the national

guideline of 100% nutritional screening for patients admitted to hospital. Following this audit, recommendations for improving rates of screening that could be implemented at a national level would include implementation of MUST and appropriate education of ward staff about the importance of nutritional screening.

Conflict of interest: none

References

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