Are patients appropriately referred to the acute orthopaedic ward?

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The new health care world that is emerging, what we in Morecambe Bay call 'Better Care Together' has as one of its aims the reduction of wasted hospital outpatient and inpatient resources. The three articles here published in MBMJ give us a local flavour of the problem and possible solutions to it. Kim Leong is a medical student who asks whether orthopaedic inpatient beds are being properly used. Jonathan Ashton is a Consultant Physiotherapist working with orthopaedic and pain medicine support in the Heysham Health Centre as an 'Integrated Musculoskeletal Service', and Andrew Crundell has devised a local scheme to tackle the problems encountered by patients using the Emergency Department as a form of first aid post. The three articles nicely define the problem and solution for commissioners.

Introductory paragraph written by Andrew Severn

ABSTRACT

Introduction: There is an increasing pressure on orthopaedic services in the UK with the growing ageing population leading to a large proportion of musculoskeletal (MSK) admissions. This has stretched NHS resources and capacity, in particular large numbers of hip fractures. At the Royal Lancaster Infirmary (RLI), there is growing concern from the orthopaedic team of the high rates of referrals. They are seeing more patients that are unsuited to being admitted to the orthopaedic ward and do not require surgical intervention and could be better managed elsewhere. This puts pressure on the beds available and does not effectively utilise the surgeon's expertise and time. However, there are no national guidelines regarding which kind of patients should be referred. The aim of this audit was to measure the proportion of patients that were admitted to the orthopaedic ward at the RLI that did not go to theatre.

Method: At the RLI, a retrospective analysis of data was recorded over a period of six months (184 days) from 1st August 2014 to 31st January 2015, which included a total of 1017 patients. Data was collected from the orthopaedic admissions list with the help of the trauma nurse coordinator.

Results: It was found that 48.3% of orthopaedic surgical admissions did not require surgical intervention. Of these, the most common diagnoses were back pain, back injuries, knee and hip pain and pubic rami fracture.

Conclusion: Overall, the results show a large proportion of patients, nearly half of which admitted did not require surgery. Given that generally patients admitted to the orthopaedic department should potentially go to theatre this is a significant amount. The results indicate the need for a more appropriate referral of patients. This could lead to NHS resources, beds and the orthopaedic team's time being used more efficiently.

INTRODUCTION

The purpose of orthopaedic surgery is to maximise pain free mobility. There has been increasing pressure on this surgical specialty due to the rise in a healthy and ageing population. The British Orthopaedic Association (BOA) has highlighted this problem due to the increased waiting lists, and burden of long term musculoskeletal (MSK) problems that are stretching NHS resources and capacity. In 2010/11, the cost of MSK care was £3.5 billion.⁽¹⁾ A growing concern is the increasing burdens of managing elderly patients, in particular the high levels of hip fractures (70,000 per year) in the UK. There is an estimated £1.7 billion cost of managing them,⁽²⁾ and the average age of hip fractures for men is 84 and women 83.⁽³⁾ Furthermore, at any one time 4,000 NHS beds are being occupied by these patients.⁽⁴⁾ However, it is the health and social care associated with the patient that accounts for 90% of the cost of management.⁽²⁾ Most of the deaths following hip fractures are not from the fracture itself but from the patients' underlying comorbidities. This highlights the essential need for a more cohesive multidisciplinary approach.⁽⁵⁾

At the Royal Lancaster Infirmary (RLI) bed pressures are a major concern. The Care Quality Commission (CQC) has highlighted issues surrounding the increased demand for surgical beds in the RLI Quality Report 2014.⁽⁶⁾ The heavy burden of patients on the orthopaedic department has led to concern from the orthopaedic team about the high rate of referrals. Furthermore, the increased length of stay for patients at the RLI blocks beds for future patients and elective trauma lists. The mean length of stay for patients with hip fractures in the UK is 20 days compared to 24.6 days for the RLI.⁽⁷⁾ Hip fractures account for the highest proportion of orthopaedic operations at 29%, followed by wrist fractures (18%) and ankle fractures (13%).⁽⁸⁾

This raises questions about appropriateness of patient referrals to the orthopaedic department and whether they can be better managed elsewhere. According to the orthopaedic team at the RLI, they are seeing a large number of patients that do not require surgical input and are more medically unwell. With the cost of a NHS bed at £250 per day it stretches

the finances of the hospital.⁽⁹⁾ Not only are these patients potentially occupying beds that could otherwise be used for patients that need to go to theatre, but they are not receiving the best care. This means that a larger portion of the surgeons' work is dedicated to these patients and their expertise and time is not effectively utilised. For example, more time spent on ward rounds with medical management and less time in theatres. Unfortunately there are no set standards or guidelines regarding which patients should be referred to the orthopaedic department. However, it is generally accepted that patients are admitted if they have a MSK injury and potentially require surgical intervention. Therefore it is vital to assess the efficiency of referrals in order to recommend potential changes that can benefit the hospital.

The aim of this clinical audit is to identify the number of patients that are admitted to the orthopaedic ward and do not go to theatre for intervention. Of these the different type of diagnoses will be determined.

METHODS

This clinical audit was a retrospective analysis of data that was taken from the orthopaedic admissions lists from the orthopaedic department (Wards 35 and 36) at the RLI. Data was collected over 6 months from 1st August 2014 to 31st January 2015. The data which was recorded using Microsoft Excel 2010 was anonymised to maintain confidentiality with the diagnoses and sex the only possible identifying criteria. The number of patients that were admitted each day to the orthopaedic department was identified along with their gender and of them the number of patients who went to theatre. Of the patients that did not require any surgical intervention,

the diagnoses were recorded. In order to accurately interpret the data, the trauma coordinator nurse analysed the patients case by case. Information that was given by the admissions lists included the patient name, date of birth, diagnosis and management plan.

RESULTS

Over a period of 6 months (184 days), a total of 1017 patients were admitted to the orthopaedic department. A summary of the results are shown in table 1. Of the patients referred, 43.9% (455 out of 1017) were males and 56.1% (562 out of 1017) were females. The highest admission rate was in August 2014 (n=187) and the lowest in January 2015 (n=126) as shown in graph 1. The graph also shows consistency across the 6 months where the proportions for patients admitted and patients not for theatre are equal all the way through and mimic each other's trends. An average of 170 patients were admitted each month and 5.5 patients each day. It was found that 48.3% (492 out of 1017) of all patients admitted to the orthopaedic department did not require surgical intervention. Of these patients, the majority of diagnoses were: back pain (18.4%), back injury (13.7%), hip pain (13%), knee pain (9.1%) and pubic rami fracture (6.4%) as shown in figure 1. Back injury included diagnoses such as suspected cauda equina syndrome, fracture of the cervical, thoracic and lumbar vertebrae. Hip pain included suspected neck of femur fractures, and acetabulum and greater trochanter fractures. Knee pain included fractures of the femoral condyle and tibial plateau as well as septic arthritis and infected knees. Of the 39.3% of patients under 'other', examples of these diagnoses are cellulitis, fractured ankles, wrists, elbows, shoulders, tibia and fibula and humerus.

Month	^a No. admitted	Male	Female	^b No. Not For Theatre	^c #Pubic Rami	Back Pain	Back Injury	Knee pain	Hip Pain	Other
August 2014	187	91	96	90	7	12	7	13	10	41
September 2014	171	82	89	81	8	8	14	8	9	34
October 2014	179	75	104	81	5	15	14	2	19	26
November 2014	171	73	98	87	2	17	19	10	4	35
December 2014	182	85	97	94	6	23	7	8	12	38
January 2015	127	49	78	59	4	14	6	4	10	21
TOTAL	1017	455	562	492	32	89	67	45	64	195

Table 1: Summary of admissions to RLI orthopaedic department from 1/08/14 – 31/01/15.

a = Number of patients admitted to the orthopaedic department.

b = Number of patients that did not go to theatre.

c = Pubic Rami Fracture.

DISCUSSION

The purpose of this audit was to measure the proportion of patients that were admitted to the orthopaedic department that did not require surgical intervention and categorise the diagnoses of these patients. By doing so, recommendations or changes can be made to improve this practice and overall health care. The results show that nearly half of patients (48.3%) admitted to the orthopaedic department did not go to theatre. This is a very large proportion given that theoretically patients are admitted with the potential to undergo surgery. The result's reliability is consolidated by the large sample size ($n=1017$) recorded over a long period ($n=184$ days).

According to the orthopaedic team, with the current trend of admissions, the department is turning into a non-surgical specialty at the RLI. But with the increasing need for these services to manage the large influx of patients requiring operations in particular hip replacements, the importance of efficiently utilising this specialty is becoming ever more crucial. Efficient use of these services will relieve bed pressures by freeing up more beds for patients that are in most need (trauma patients requiring theatre). Financially, beds would be used to their best potential considering the high cost of NHS beds and resources to manage in-patients. With more appropriate referrals, the orthopaedic team's time and skill set are better utilised. More time would permit the surgeons to operate on patients, especially with the growing waiting and elective lists. In addition, patients would receive the best-suited health care. For example, medically unwell patients that are admitted and do not require surgery would not be

managed by the appropriate team. A surgeon's knowledge and experience are not best utilised for these patients, which in turn does not give them the best possible health care.

Of the patients that did not require surgery, the main diagnoses were back pain, back injury, hip pain, pubic rami fracture and knee pain. A large number of admissions from back injuries were suspected cauda equina syndrome. Despite the occurrence of this condition being very rare, it is an essential diagnosis to make as late diagnosis and treatment can lead to permanent neurological deficit.⁽¹⁰⁾ Therefore the high referral rate could be due to uncertainty whether to rule out cauda equina syndrome and admit the patient as a precaution. This could lead to scope for more guidance and teaching for doctors to be confident in diagnosing this condition and thus fewer patients being admitted unnecessarily.

All pubic rami fractures that were admitted did not require operations but conservative management consisting of analgesia and tolerated weight bearing mobilisation.⁽¹¹⁾ They are most likely to be referred due to being medically or socially unfit to go home. Thus the best place for these patients to be managed is on a medical ward, with the best expertise and resources to treat their medical co-morbidities.

Despite some patients having fractures, they did not warrant an operation but may have been admitted for other reasons. This kind of detail was not gained from the trauma list data but would be available in the patient files. This is one of the limitations of this study. The information that was presented by the trauma admissions list did not have much detail about the patient. Therefore reasons for admission to the department, such as social and other medically-related factors were excluded. Details about the patients are not given as a case by case basis, but a brief and crude diagnosis.

Another potential reason for admission for patients not requiring surgery is that they could be awaiting investigations such as Magnetic Resonance Imaging (MRI) scans. Waiting for investigations can take a long time and with the 4 hour target time for the accident and emergency department (A&E), patients need to be discharged and admitted to a ward urgently. This leads to more patients waiting on the ward for test results that can initiate an action plan if they still need an operation.

To further add to the large volume of patients admitted to the orthopaedic department, the increasing bed pressures have seen medical patients redistributed to the available beds of this ward if their designated ward is full. These patients are known as 'outliers' and as aforementioned, they are not managed under their appropriate specialty and thus do not receive the best possible health care. Despite these patients having a significantly shorter stay, there is a greater in-patient death rate.⁽¹²⁾

At present there exists the 'watershed conditions', which are a set list of conditions that specify what kind of patient each department should admit. This is agreed by the leading consultants in different departments at the RLI. The guidance is mainly for the emergency department where to refer patients if there is a dispute. For referral to orthopaedics, patients are accepted if they have fractures causing back pain regardless of whether they require an operation. In addition, atraumatic back pain patients that fail to mobilise and excluded cauda equina syndrome are accepted. It also states that hip pains with no fracture but with significant co-morbidities are admitted along with immobile patients with a pubic rami fracture.⁽¹³⁾ The conditions outlined by the 'watershed conditions' reflect the

audit results of diagnoses that did not go to theatre and thus the adherence to this guidance for referrals.

CONCLUSION

As there are no set guidelines with regards to referral of patients to the orthopaedic department at the RLI it was difficult to compare the results of this audit to standards. However, the results show a significant proportion of patients not requiring surgical intervention being admitted to the ward demonstrating the need for a more efficient referrals system.

In order to improve the appropriateness of referrals to the orthopaedic ward, hospital trust guidelines should be formed with a detailed pathway on how to manage and refer orthopaedic conditions. This would be much more thorough than the 'watershed conditions' document used at present. For example, the creation of a detailed document indicating circumstances where referral to the trauma and orthopaedic department is ideal, and where appropriate to refer to a primary or community care setting. For each condition there could be a comprehensive pathway in how to manage the patients accordingly. This form of guidance with a step by step pathway would have many variables depending on the type of patients presenting, making the referral of patients more adaptive. Presenting conditions such as pubic rami fractures could also be omitted from referrals as they do not require surgical intervention.

With the large proportion of non-surgical patients in the department, to suit their demands more medical staff could be employed to look after them. Their medical expertise and experience are not only better suited to managing these patients, but will relieve the time for surgeons to spend in theatre. Due to the heavy burden of elderly MSK injuries, it highlights the need for the introduction of more orthogeriatricians at the RLI. Patients who experience fragility fractures and falls carry a poor prognosis due to their numerous serious co-morbidities. Therefore it is essential to deliver high quality care whilst in hospital to reduce morbidity and mortality post discharge.⁽¹⁴⁾ The increasing demand of patients indicates the potential need for a frailty unit at the RLI. In addition, patients (particularly the elderly) who do not require surgical intervention to their MSK problem need to be rehabilitated back into the community as safely as possible. This frailty unit would be able to provide focused care on this specific problem. This unit would be staffed by orthogeriatricians, specialist nurses, occupational therapists, physiotherapists and social workers.⁽¹⁵⁾

Finally, this audit should be repeated in the future to assess the progress of the referral system and complete the audit cycle at the RLI. The audit can be extended over a longer period of time for a more representative set of results as well as gauge the trend over a year to determine the factors in which to address any fluctuations. Future audits could include more details as a case by case basis exploring the main reasons for referral to the orthopaedic ward in those who did not require surgery. This would identify in greater detail why patients have been referred and the reasons can be addressed. The audit could also extend to other hospital trusts to assess the efficiency of referral systems and allow comparison between them. This has the potential to create auditable standards to be used as a national guideline.

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