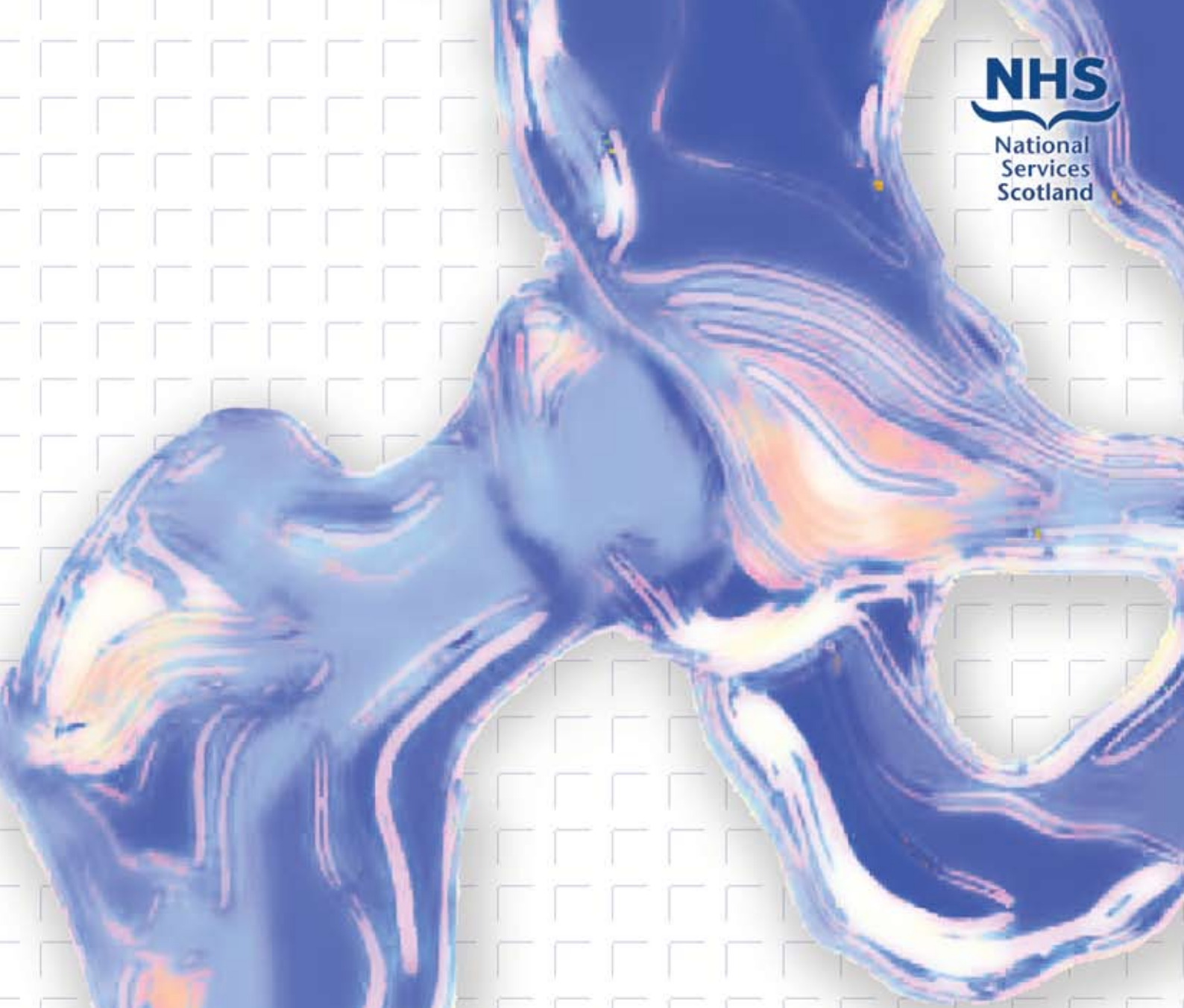

NHS National Services Scotland

The patient journey post hip fracture: What constitutes rehabilitation?

A Report from the Scottish Hip Fracture Audit

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Telephone 0131 275 7777

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Foreword

I would like to welcome you to the second hip fracture rehabilitation sprint audit report, summarising six months of Scottish data in 2008. The aim of this audit was to review and build upon the information gathered from the Scottish Hip Fracture Audit (SHFA)'s first rehabilitation audit two years earlier. While these two documents have many similarities, not all elements are directly comparable. Many more units were involved in the second audit (20 out of the 21 mainland units) including the addition of the Glasgow hospitals with their internationally recognised model of osteoporosis assessment and secondary prevention. Patients were reviewed at 120 days compared to 42 days in 2006. The present report should allow further insight into the ongoing investigation and management of patients by looking in more detail at assessments performed throughout the patient's acute orthopaedic and rehabilitation stay.

Since the previous rehabilitation audit, a number of publications and initiatives have recognised the importance of multiple interventions in the assessment and management of hip fracture patients (e.g. publication of the revised 'Blue Book' on the Care of Fragility Fractures in 2007, the first BOA Standard for Trauma, *Hip Fracture in the Older Person* in 2008, and the updated SIGN 56 *Prevention and Management of Hip Fracture in Older People* expected in 2009). Evidence of benefit is strongest in areas such as falls and osteoporosis assessment, but there is also a growing body of support for good practice in nutritional and cognitive assessment of this complex cohort of patients aimed at both maximising recovery and reducing the risk of future falls and fractures.

Over the years SHFA have collected and published patient data concentrating on the acute and surgical issues involving hip fracture patients. This provision of validated data has allowed direct comparisons between units, and has driven service improvement such as reducing delay to theatre and fast tracking patients through the Emergency Department. This new rehabilitation report clearly sets out current practices in areas such as cognitive and nutritional assessment and in our secondary preventative measures.

We welcome your comments and thoughts on this report. Please contact me at Damien.Reid@lanarkshire.scot.nhs.uk.

Damien Reid

SHFA Chairman

Summary and main findings

As our population ages and the hip fracture incidence is correspondingly expected to rise, we have an increasingly important opportunity to positively intervene in the recovery period of our patients and in their secondary preventative care. This report identifies many areas of good practice, as well as identifying differences from unit to unit. It is hoped that individual units will find the report useful to reflect on current practice and, where necessary, implement changes to practice.

Falls

- 93% of patients were known to have presented with a fall
- 57% of falls were recorded as simple or mechanical falls, but 16% had diagnosed or suspected medical causes
- Only 54% of patients had falls assessment carried out, and this fell to 33% of those returned/discharged to a care home
- 34% of rehabilitation patients had their lying/standing blood pressure recorded

It is important that we remain aware that many patients admitted to hospital with a hip fracture will have multi-factorial causes for their falls. However, the fall is often attributed to a simple or mechanical cause and, as a result, opportunities to assess, properly investigate and modify underlying falls risk factors may be overlooked.

Bone health

- 41% of patients who had a history of previous fragility fracture were on medication for bone health at presentation, of which 15% were on bisphosphonate and calcium/vitamin D
- At 120 days 67% of patients were on prescribed bone health medication; 27% were on bisphosphonate and calcium/vitamin D

Many clinicians will make the conscious decision not to prescribe bone health medication until at least six weeks after hip fracture. Reviewing patients at 120 days (rather than at 42 days as in the previous rehabilitation audit) is likely to have provided us with a more accurate impact of services provided after hospital discharge.

Speciality review

- 56% of patients had a COE review while inpatient
- 31% had a medical speciality review
- 13% of rehabilitation facilities caring for hip fracture patients had orthopaedic clinicians providing routine input

The data does not separate routine reviews from those carried out for acute episodes but certainly we must be aware of the opportunity to assess and modify any multi-factorial issues which may have contributed to the patient's admission.

Cognitive assessment

- 69% of rehabilitation patients had their cognition assessed during their inpatient stay
- 31% of surgical patients were authorised for surgery using Adults With Incapacity
- Only 38% of patients authorised using Adults With Incapacity had their cognition assessed in acute orthopaedic care

Early recognition and assessment of cognitive impairment is important in tailoring all aspects of rehabilitation and discharge planning to the needs of each patient. It is disappointing that even in patients whose surgery required to be authorised using Adults with Incapacity only slightly more than a third had their cognition assessed in acute orthopaedic care.

Nutritional assessment

- 69% of patients had a nutritional assessment
- 24% of patients were referred to a dietician

Appropriate nutrition is important in maximising a patient's recovery from a hip fracture and subsequent surgery, so it is encouraging to see that so many patients had their nutritional status assessed.

Physiotherapy/occupational therapy

- 96% of hip fracture patients were assessed and treated by physiotherapy services during their inpatient stay
- 73% of hip fracture patients were assessed and treated by occupational therapists during their inpatient stay

Loss or partial loss of mobility is a common and serious complication of hip fracture and it is obvious that physiotherapy and occupational services play a large part in optimising timely discharge of patients.

Supported discharge teams

- 36% of patients who were discharged home from orthopaedics and 41% of those discharged home from rehabilitation were discharged with the assistance of a supported discharge team

Supported discharge teams are multi/interdisciplinary teams who provide short-term care post-discharge – commonly for up to six weeks. By continuing the rehabilitation process within the patient's own environment, supported discharge teams can improve the quality and safety of discharges. In addition, they often reduce length of stay in hospital, and can provide valuable links between primary and secondary care services.

Data collection and presentation methods

Hospital participation

Twenty of the 21 Scottish mainland hip fracture operating hospitals participated in the Scottish Hip Fracture Audit's 2008 audit of rehabilitation services (see Fig. 1 for fuller details). Data were collected at each participating hospital by dedicated audit co-ordinators. All patients with a hip fracture who were admitted to orthopaedic care between 1st April and 30th September 2008 were included in the audit, unless they were younger than 50 years old.

Rehabilitation services and data collection

Rehabilitation services for hip fracture patients in this report were provided in various settings. These included facilities run by Consultants in Medicine for the Elderly, Orthopaedic Consultants and General Practitioners.

For many measures, we provide data at two levels on a set of four charts (see Fig. 9 as a typical example). Firstly (green chart), we report data for all of a hospital's hip fracture patients during their total inpatient stay (combination of acute orthopaedic care plus any subsequent rehabilitation period if discharged to a rehabilitation unit). Secondly (blue and yellow charts), to allow comparison of similar patients across units, the majority of measures in this report are also presented by discharge destination from acute orthopaedic care: straight home, straight to a care home, or to a rehabilitation facility. Data from patients discharged to a rehabilitation facility are presented according to whether treatment occurred whilst in acute orthopaedic care or on the rehabilitation facility (or in both types of care).

In units that discharged patients to multiple off-site rehabilitation units, resources did not always allow collection of all rehabilitation data. In these circumstances, local audit co-ordinators focused on gathering complete data from the sites which accommodated most of their hip fracture patients. Some local co-ordinators were supplied with data from remote off-site rehabilitation units through collaboration with a link nurse who provided the requested data. The proportion of patients who had uncollected rehabilitation data is shown in Fig. 3 (red bar) and is broken down to individual rehabilitation units in more detail in Appendix 1. In hospitals where we were unable to collect all rehabilitation data, the overall proportion of care given (green chart) may have been underestimated. The proportions represented by the red bars on Fig. 3 are the *maximum* underestimation for each measure for your hospital, but in many cases this will be reduced if we know that the patient had already had an action undertaken whilst in acute orthopaedic care. Background tables available from the web version of this report (www.shfa.scot.nhs.uk/Rehab_Report_2009.pdf) provide more details for each chart. In contrast to the charts for all patients (green charts), the rehabilitation-specific (blue and yellow) charts report data from all rehabilitation patients whose data was collected (as detailed in Appendix 1) and so are not affected by underestimation.

If patients were still in acute orthopaedic care or rehabilitation at 120 days post-admission for their hip fracture, we report management for those 120 days. For rehabilitation patients, we report on the *first* rehabilitation stay after they leave acute orthopaedic care. A small proportion (5%) of rehabilitation patients were subsequently transferred to another rehabilitation facility for further rehabilitation care. Although resources were not available to collect such data at all centres, some local data may be available on request.

In addition to patient-specific data, we collected general information 'profiles' for all 20 contributing operating units, and sixty-four regularly used rehabilitation units. This additional information is summarised throughout the relevant text.

More detail

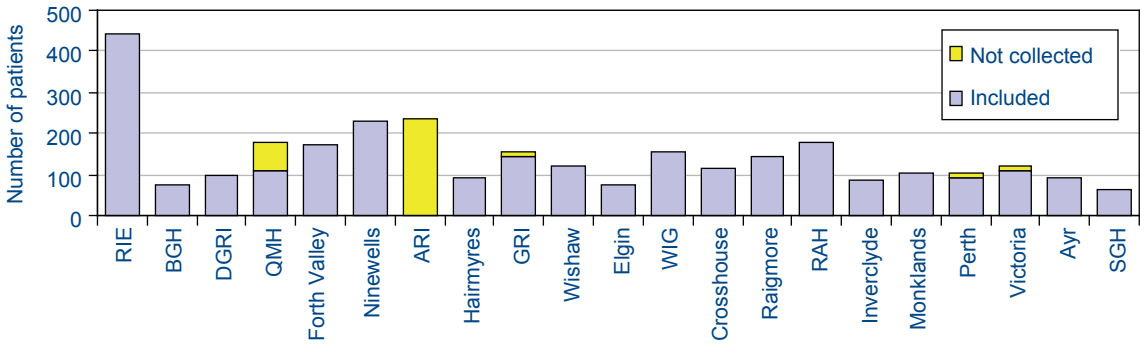
A more detailed version of the data presented in this report will be available on our website from June 2009 (www.shfa.scot.nhs.uk).

Inclusion of patients

We received acute orthopaedic care data from 2708 fractures from 20 participating hospitals. Inclusion of patients' acute orthopaedic data was almost entirely complete whilst each hospital participated in the time-limited rehabilitation audit, representing 97% of all hip fractures presenting to the 20 hospitals in April to September (see Fig. 1 for numbers per hospital, and reasons for non-collection).

Fig. 1: Number of patients reported on – acute orthopaedic care

Click here to see more detail in Table 1

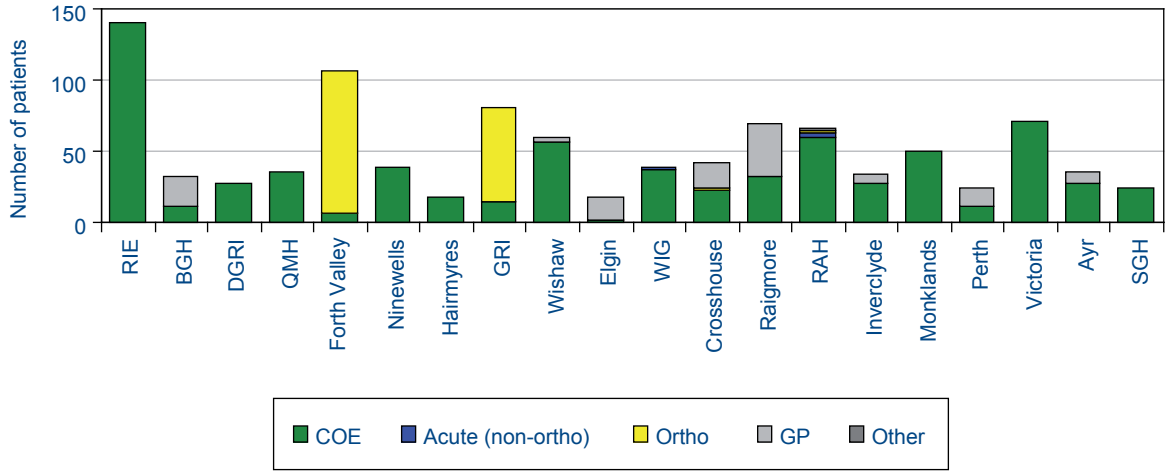


Perth began sprint audit data collection on 1st May and QMH in mid-June. ARI did not participate in the Rehabilitation audit. July to September GRI and Victoria Infirmary data was collected retrospectively and could not always be sourced.

In this report we also present data on further management undertaken on patients who were transferred to rehabilitation care. Although rehabilitation data collection was less complete, we include rehabilitation data for 82% of all patients transferred to a rehabilitation unit (see Fig. 3 for more details from individual hospitals). Fig. 2 summarises the numbers of patients whose data was collected from subsequent 'rehabilitation' wards, and the specialties responsible for care.

Fig. 2: Number of patients reported on in rehabilitation care by specialty

Click here to see more detail in Table 2



Whilst many patients are sent to rehabilitation facilities which are overseen by clinicians who specialise in 'Care of the Elderly' (COE), in some units the first rehabilitation ward is run by orthopaedic staff, GPs, or 'shared care' facilities.

Note that throughout this report data are presented by hospital where the patient was originally treated for their acute orthopaedic care, even though they may have been transferred to other hospitals for rehabilitation.

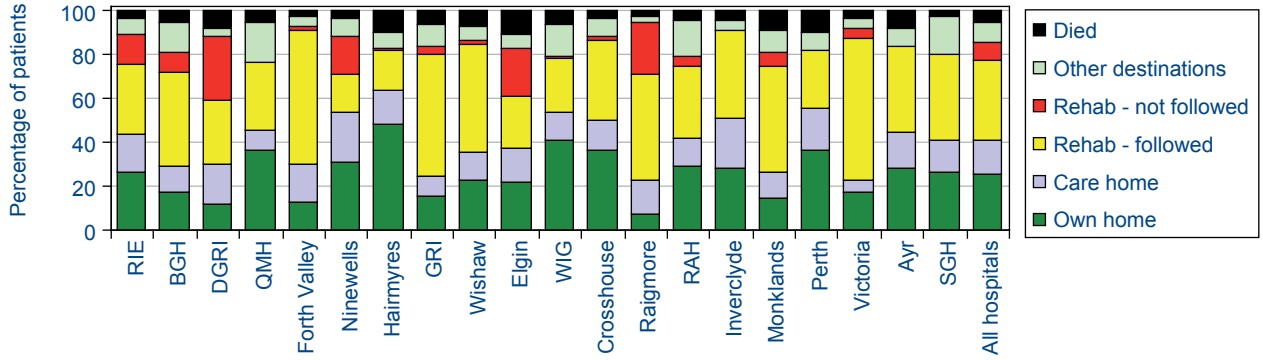
Discharge destination and length of stay

Discharge destinations

Eighty-six percent of hip fracture patients were discharged from acute orthopaedic care to their own home, their care home or a rehabilitation unit (Fig. 3). We collected rehabilitation data from most patients who were discharged to rehabilitation, but fewer data from hospitals that discharged many patients to outlying rehabilitation units (red bar on Fig. 3).

Fig. 3: Discharge destination from acute orthopaedic care

Click here to see more detail in Table 3

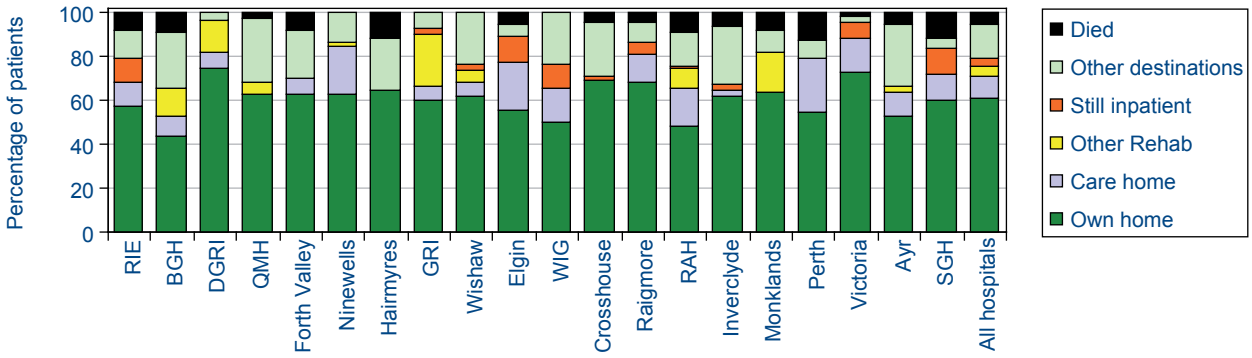


Other destinations are mainly NHS Continuing Care and Acute Hospital.

Sixty-one percent of patients who were followed into rehabilitation care were subsequently discharged to their own homes (Fig. 4). 'Other destinations' included NHS continuing care (9% of all rehabilitation patients) and acute hospital wards (5%).

Fig. 4: Discharge destination following rehabilitation care

Click here to see more detail in Table 4



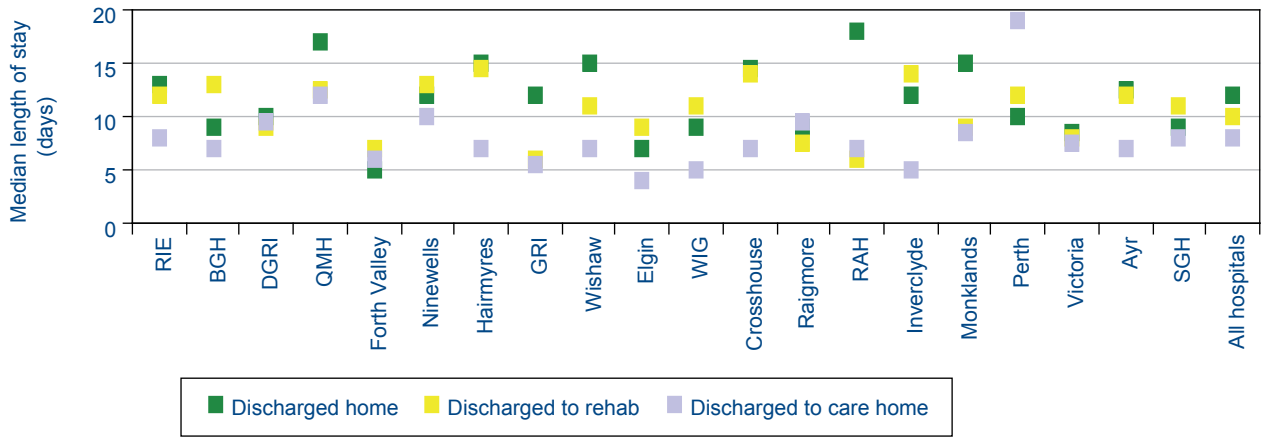
'Still inpatient' if still in rehabilitation care at 120 days post-admission to acute orthopaedic care for hip fracture.

Length of stay

Generally, patients who were discharged home spent more time in acute orthopaedic care than those who were discharged to rehabilitation care. Care home patients spent least time in acute orthopaedic care.

Fig. 5: Length of stay in acute orthopaedic care by discharge destination

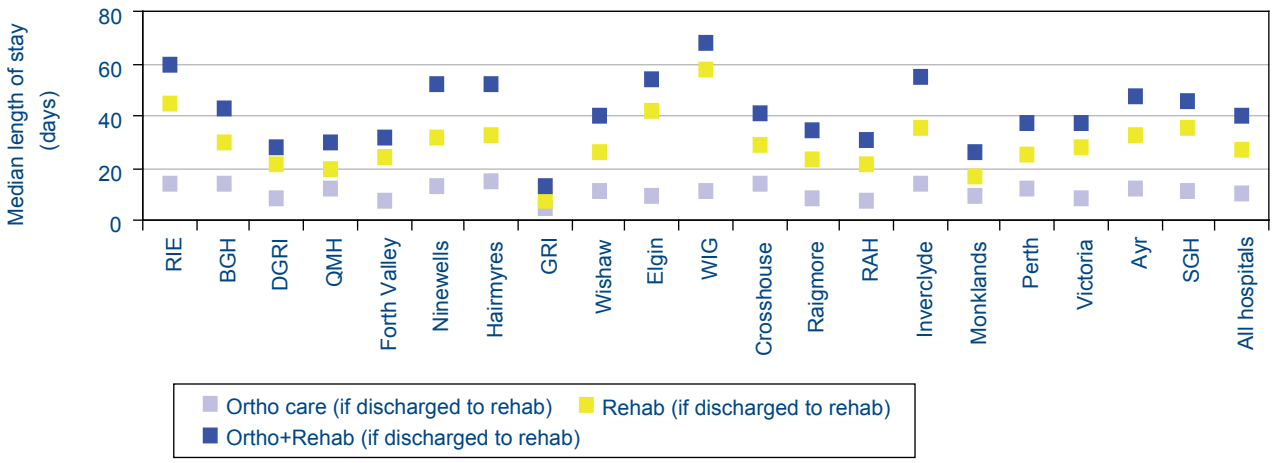
Click here to see more detail in Table 5



For those patients discharged to rehabilitation care, length of stay varied between hospitals (Fig. 6). This may reflect different policies of transfer from orthopaedics to rehabilitation units. It is known that some units operate an automatic transfer of patients five days post-operatively whilst other units use rehabilitation as a ‘step down’ ward for frailer patients.

Fig. 6: Rehabilitation patients - length of stay in acute orthopaedic care and first rehab stay

Click here to see more detail in Table 6



Data is for patients whose rehabilitation data was collected and reported throughout this report. Some hospitals were unable to collect rehabilitation data from all rehabilitation units or patients, particularly hospitals with many smaller or outlying rehabilitation units (see Appendix 1 for participation details of individual rehabilitation units). Five per cent of rehabilitation patients in the graph above were discharged to a second rehabilitation unit, so overall median length of rehabilitation stay (including second rehabilitation stays) will be slightly longer than indicated above.

Did patients fall? – context and causes

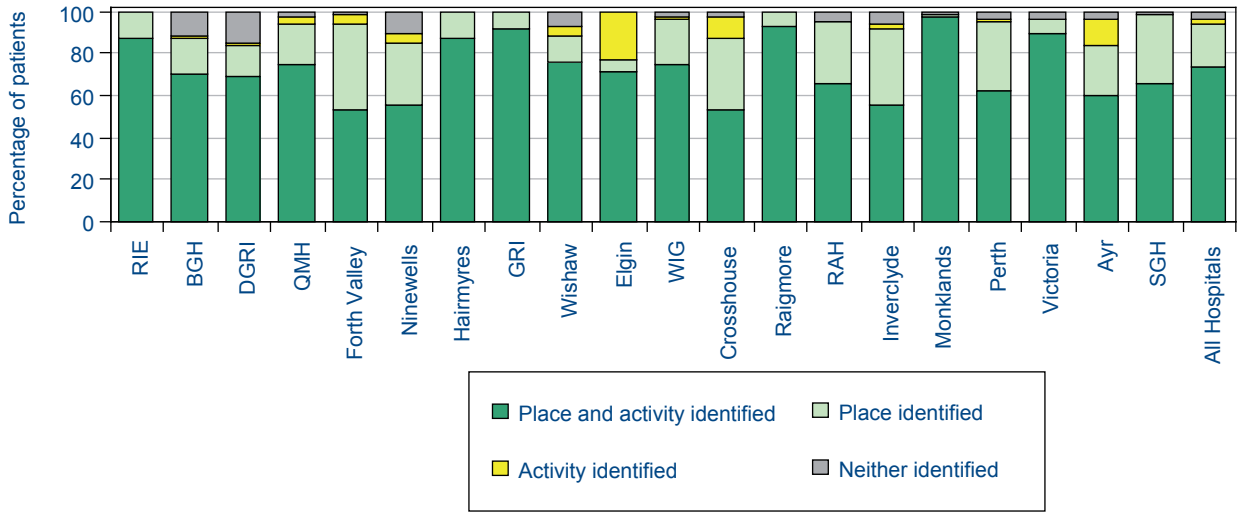
On average, 93% of patients who fractured were known to have fallen, and in a further 5% of cases the cause of the injury was unclear.

The figures below show how often the context (place and activity) of falls was documented, and the likely causes of falls.

Context of fall

Fig. 7: Context of fall

Click here to see more detail in Table 7



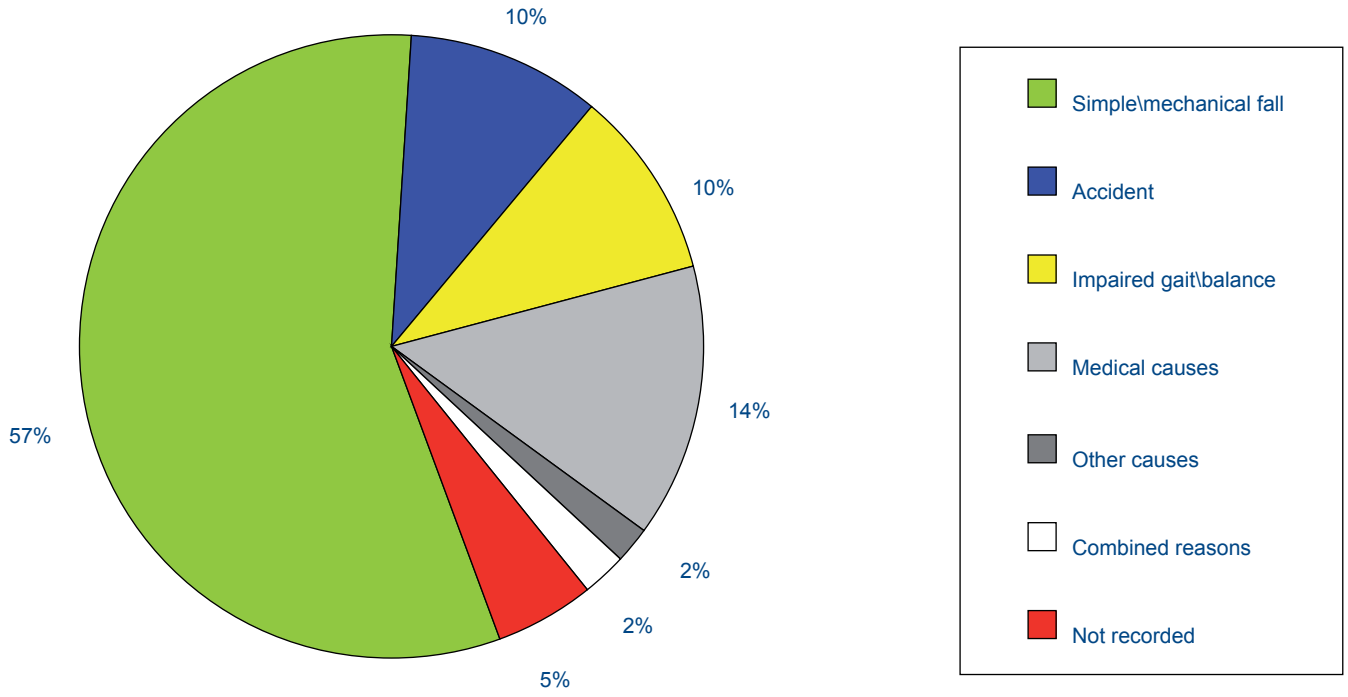
In most cases it was documented where the patient had fallen, but activity was not recorded in 24% of patients.

Likely cause of fall

From the literature [1-3], many patients admitted to hospital with a hip fracture have multi-factorial causes for their falls. However, the fall is often attributed to a simple or mechanical cause. As a result, opportunities to properly investigate and modify underlying falls risk factors may be overlooked.

Click here to see more detail in Table 8

Fig. 8: Likely causes of fall



Fifty-seven percent of falls were recorded as simple or mechanical falls, ten percent were due to accidents and a further ten percent were recorded as being principally due to impaired gait/balance. Fourteen percent had documented or suspected medical causes (poor vision, cardiac problems, postural hypotension, neurological problems or syncope). Combined reasons were diagnosed or suspected medical problems in combination with each other or with impaired gait/balance. Alcohol was the main 'Other' documented cause of fall.

Visual acuity

At the time of profile data collection, no units reported routine measurement of visual acuity. However, some COE units in Glasgow indicated that training was being undertaken and one unit has now commenced routine visual acuity measurement.

Actions during inpatient stay

ECG

Ninety-nine percent of patients had a documented ECG in acute orthopaedic care. Of those patients who went onto a rehabilitation facility, twenty-seven percent had another ECG whilst in rehabilitation.

COE inpatient reviews

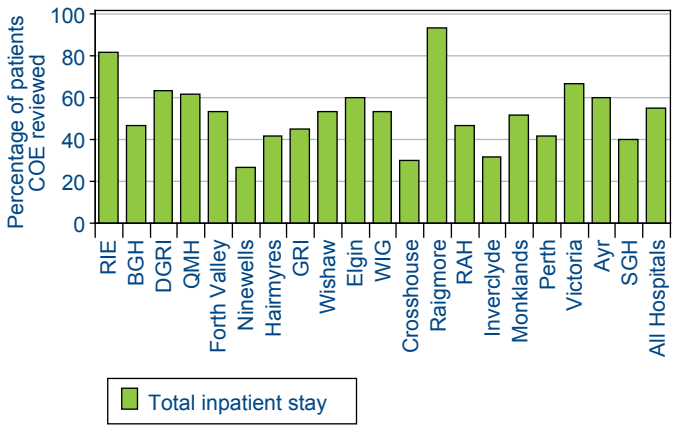
COE inpatient reviews were also frequent. Some units have protocols for transfer of patients to rehab facilities which means that patients do not have to be reviewed by clinicians from the receiving rehabilitation facility prior to transfer. In other units all patients are reviewed prior to acceptance for transfer for rehabilitation. The frequency of routine COE ward rounds and other COE input carried out within the orthopaedic acute stay ward will also influence the level of review. Seventy percent of the 20 participating operating units reported regular COE input for patients in the orthopaedic unit. This input ranged from daily to weekly ward rounds.

It is interesting to note that in some hospitals the majority of hip fracture patients did not receive a COE review. This was especially true for those patients discharged directly from orthopaedic wards to their own homes or to a care home. The latter group are often the frailest individuals with the most complex needs. Geriatricians may be best placed to perform an initial medical falls assessment and/or to ensure proper onwards referral to appropriate falls services. In addition, it is noted that being transferred to a rehabilitation environment does not necessarily ensure a geriatrician's review. This is mainly because some patients receive their rehabilitation in facilities with medical cover from General Practitioners or other medical specialty staff.

Fig. 9: COE inpatient reviews

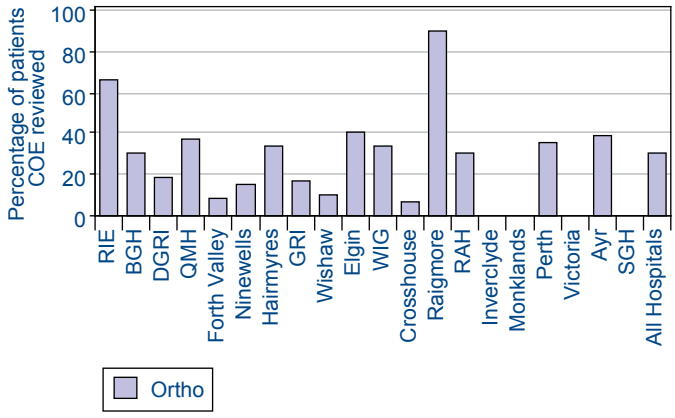
Click here to see more detail in Table 9a

a) All patients during their total inpatient stay



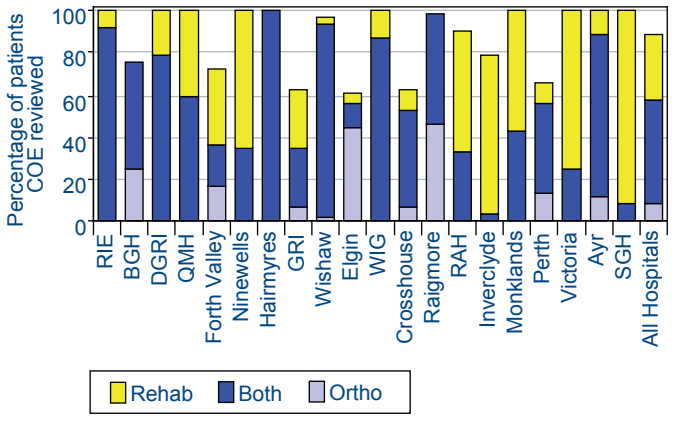
Click here to see more detail in Table 9b

b) Patients returned/discharged straight home



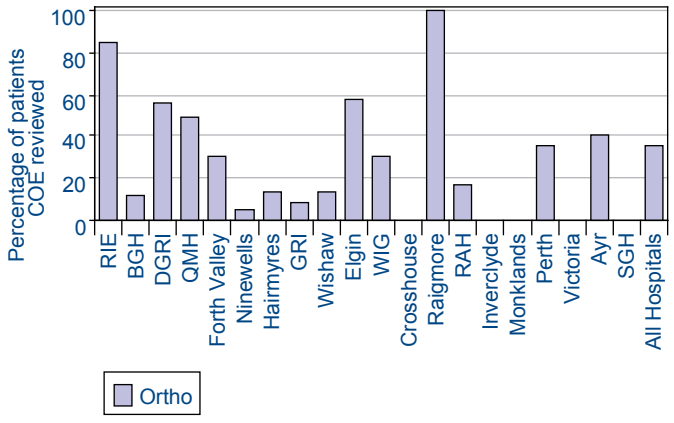
Click here to see more detail in Table 9c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 9d

d) Patients returned/discharged straight to a care home



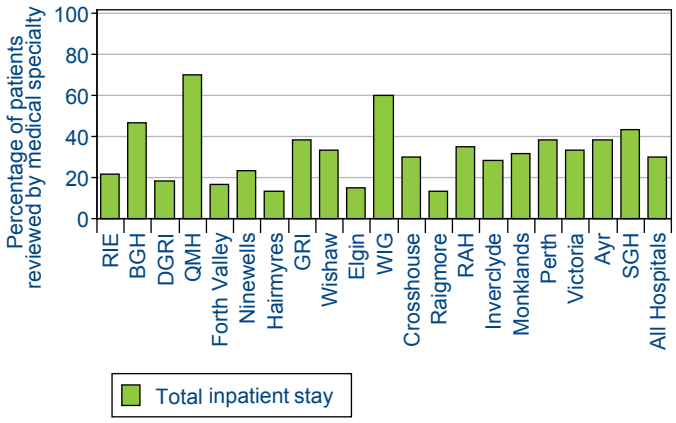
Medical specialty inpatient reviews

Medical specialty inpatient reviews were less frequent, but still common in some units, including orthopaedic units with regular COE input. Once again patients discharged directly to a care home were least likely to be seen by medical specialty staff, perhaps reflecting their relatively shorter inpatient stay.

Fig. 10: Medical specialty inpatient reviews

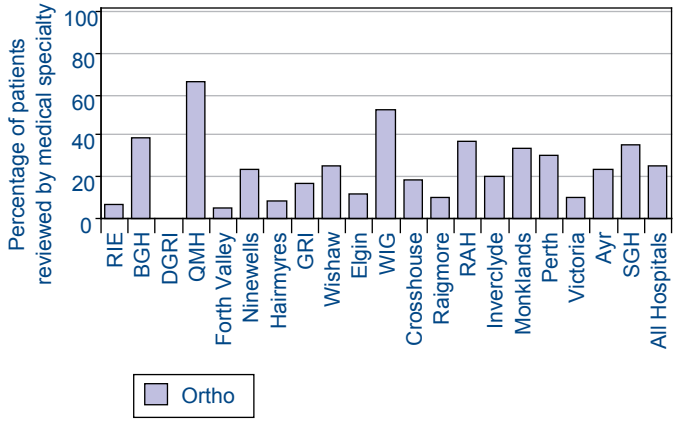
Click here to see more detail in Table 10a

a) All patients during their total inpatient stay



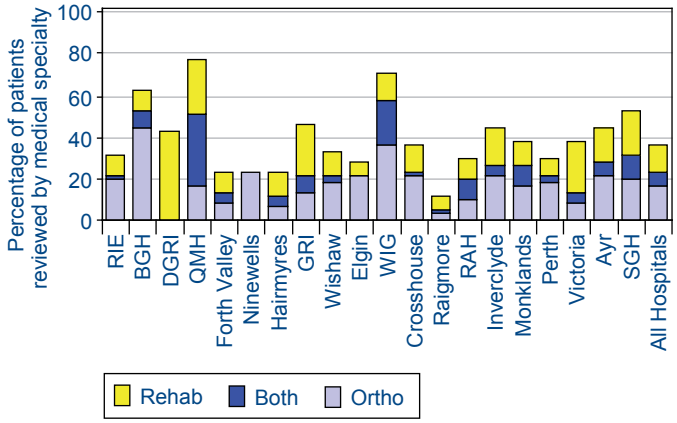
Click here to see more detail in Table 10b

b) Patients returned/discharged straight home



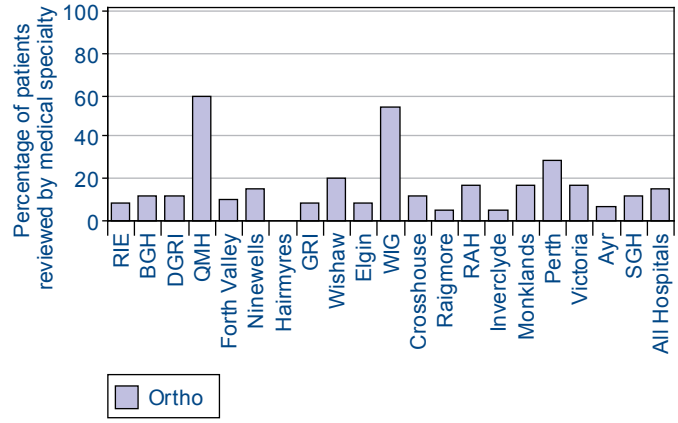
Click here to see more detail in Table 10c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 10d

d) Patients returned/discharged straight to a care home



Falls Clinic referrals

Only 19 (1%) patients had a documented Falls Clinic referral whilst in acute orthopaedic care, and 11 of these were from Perth. Three percent of rehabilitation patients had a documented Falls Clinic referral whilst in rehabilitation care. Seventy percent of participating operating units reported that they had a Falls Clinic, so these figures may suggest poor documentation of referral.

COE Clinic referrals

Twenty (1%) patients had a documented COE Clinic referral whilst in acute orthopaedic care, although referrals were slightly more frequent at Elgin, Ayr and SGH. Four percent of rehabilitation patients had a documented COE Clinic referral whilst in rehabilitation care, including up to 36% of rehab patients from Crosshouse, RAH and Ayr. This will not reflect further patients who are routinely followed up at COE clinics following COE discharge.

Specialist clinic referrals

Fifty-six (2%) patients had a documented specialist clinic referral whilst in acute orthopaedic care. Specialist clinic referrals were more frequent from rehabilitation units (10% of all rehabilitation patients).

Practical interventions

Practical interventions included replacing spectacles or worn shoes, or inpatient reviews by podiatry or substance misuse professionals. Forty-two (2%) patients had a documented practical intervention whilst in acute orthopaedic care. This increased to 12% of all patients in rehabilitation care (including 36-61% of patients from Perth, SGH and RAH).

Orthopaedic ward rounds in rehabilitation facilities

Few (13%) rehabilitation facilities have orthopaedic clinicians providing routine input (e.g. weekly ward rounds).

Multidisciplinary team meetings

All rehab facilities and most operating units reported that they held routine multidisciplinary team meetings (three or more disciplines) at least once a week.

Falls assessments and care plans

Falls assessments

Physiotherapists were asked what tool they commonly used to screen patients' fall risk. Cannard was reported as the most common tool in acute orthopaedic units. Nursing staff as well as physiotherapists will frequently carry out screening. Tinetti and Elderly Mobility Scale were reported as more commonly used by physiotherapists in rehabilitation facilities (predominately COE/GP-run units). Further falls assessments may have been performed following discharge by supported discharge teams, community falls services, etc.

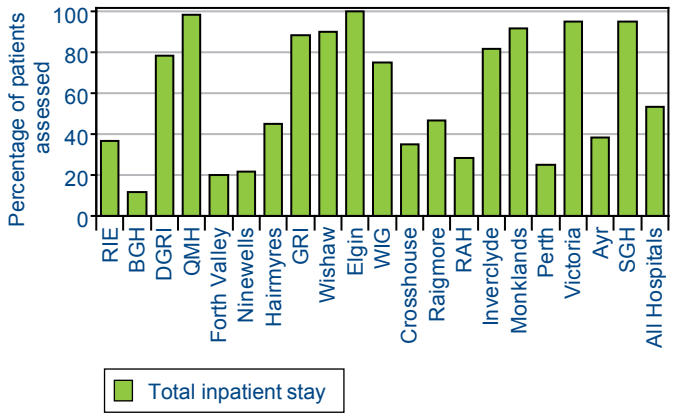
Given that 93% of these patients have a documented fall and all have a fracture, it is disappointing that a formal falls assessment and care plan was not completed for a larger number of individuals. Similar to the findings of our previous Rehabilitation Audit in 2006, those discharged to care homes or their own home were least likely to be assessed despite their significant co-morbidities and further falls/fracture risk.

If falls risk assessment strategies are to be effective, the first assessment should be carried out as soon as possible after admission, when patients are at highest risk of falling [4].

Fig. 11: Nursing/AHP falls assessments

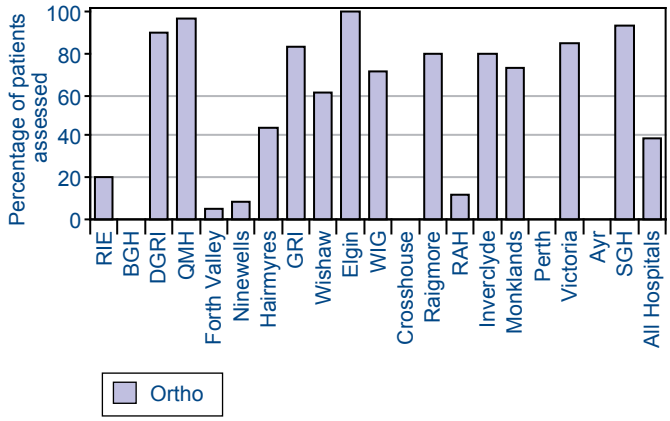
Click here to see more detail in Table 11a

a) All patients during their total inpatient stay



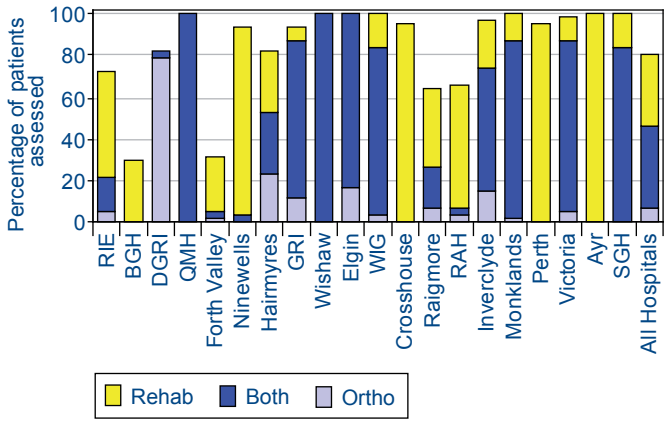
Click here to see more detail in Table 11b

b) Patients returned/discharged straight home



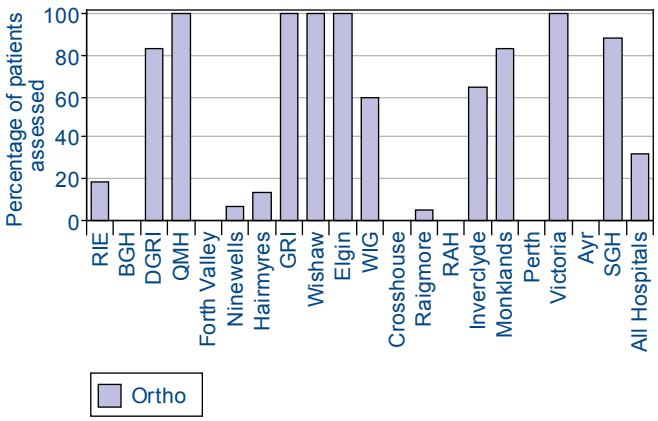
Click here to see more detail in Table 11c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 11d

d) Patients returned/discharged straight to a care home

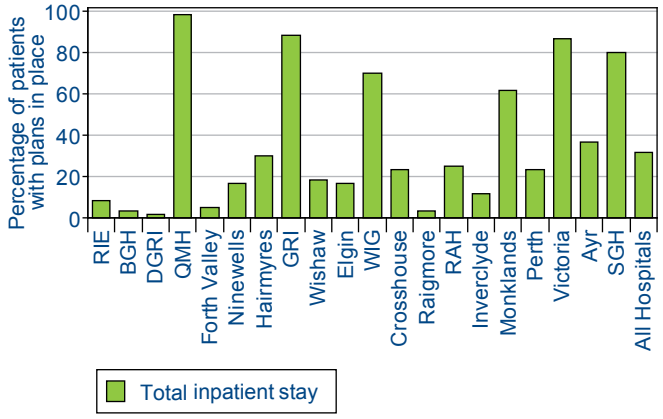


Falls nursing care plans

Fig. 12: Falls nursing care plans in place

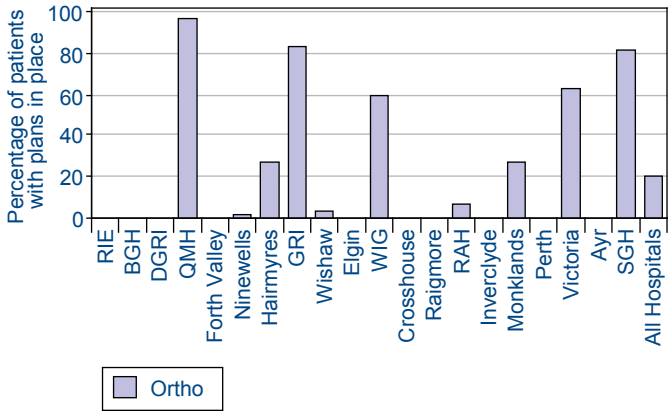
Click here to see more detail in Table 12a

a) All patients during their total inpatient stay



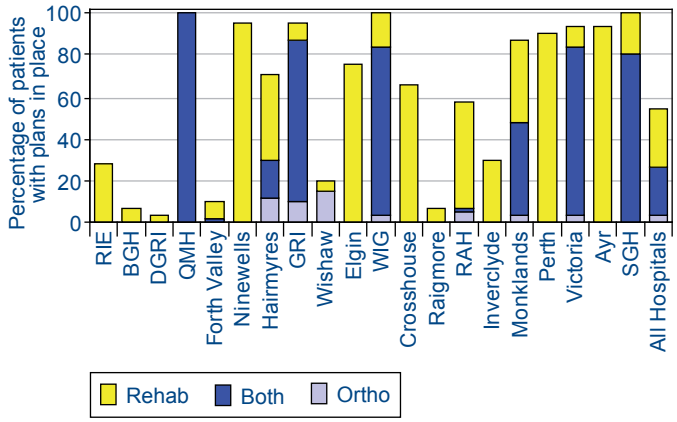
Click here to see more detail in Table 12b

b) Patients returned/discharged straight home



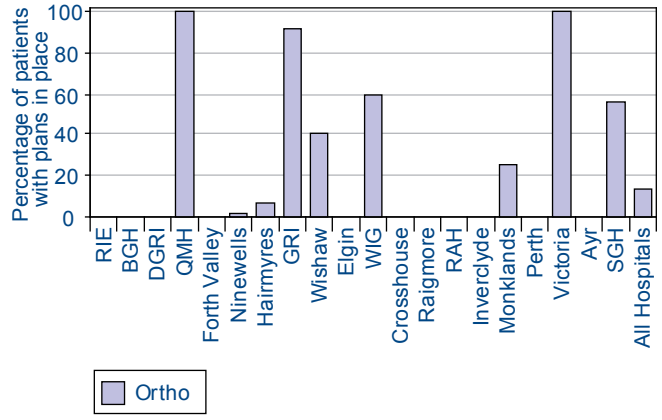
Click here to see more detail in Table 12c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 12d

d) Patients returned/discharged straight to a care home



Forty-four of the 570 patients who had plans in place on the orthopaedic ward were known to have subsequently fallen on the orthopaedic ward, and in 38 cases their plan was updated outwith normal routine update times. Sixty-nine of the 517 patients who had plans in place on the rehabilitation ward were known to have subsequently fallen, and in 50 cases their plan was updated (outwith normal routine update times).

Only four acute orthopaedic units reported *routine* use of falls nursing care plans although clearly more than four units actually had them within patients' documentation. Seventy percent of COE and GP-run rehabilitation units reported routine use of falls nursing care plans and this is reflected in the data above.

Almost all units that routinely used falls nursing care plans reported that the plan would be updated (outwith normal routine update times) if the patient sustained a subsequent inpatient fall.

In recent scientific literature, caution has been raised regarding the use of risk assessment and care plans [4-7]. Their completion will only influence falls risk if each identified falls risk factor is modified accordingly (e.g. poor vision corrected with provision of spectacles, incontinence generates a formal continence review, unsteady gait leads to physiotherapy review, etc). Resources did not allow us to measure if identified risks were modified appropriately.

Policies

Sixty percent of orthopaedic units reported having a falls assessment policy and 70% a policy for bed-rail use. Only 35% of units reported having a policy for hip protector use.

Sixty-seven percent of rehabilitation units reported having a falls assessment policy and 78% a policy for bed-rail use, but only 27% of units reported having a policy for hip protector use. A further 10% reported a patterned use of hip protectors, although there was no official policy.

Cognitive assessment

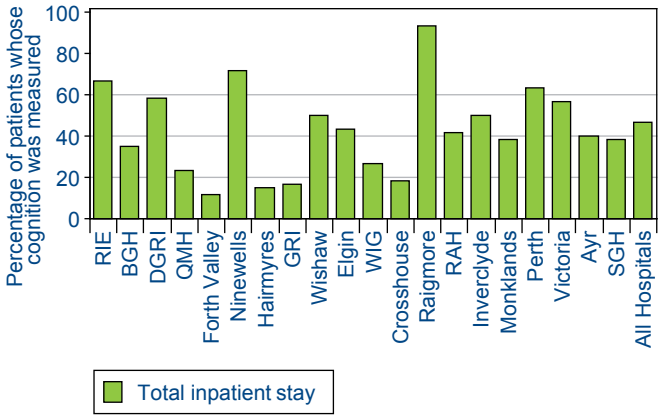
Impaired cognition is known to influence falls risk, rehabilitation potential and outcome [2-4,8-10]. Mental test scores on admission are also a useful baseline for monitoring peri- and post-operative confusion, delirium being a common finding in older inpatients.

Although patients discharged to a rehabilitation setting were more likely to have their cognition tested, it is disappointing that 31% of patients who went to rehabilitation care (and 53% of all patients) had no documented assessment. Some of the differences seen between units may be dependent on the specialty overseeing the rehabilitation episode of care.

Fig. 13: Was cognition measured?

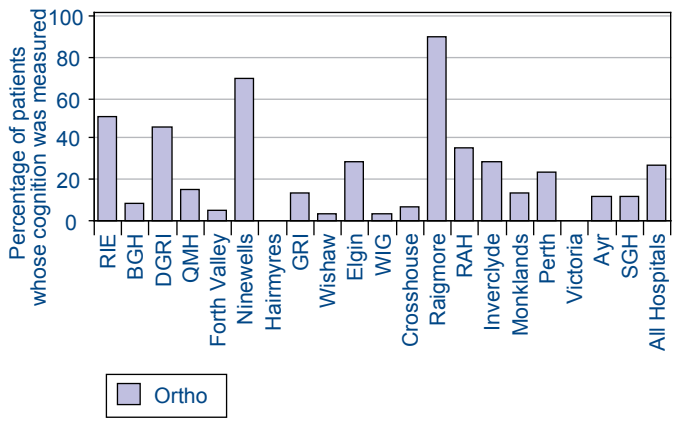
Click here to see more detail in Table 13a

a) All patients during their total inpatient stay



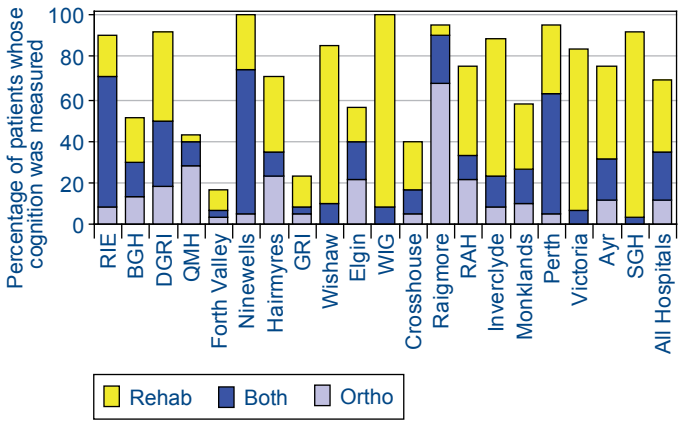
Click here to see more detail in Table 13b

b) Patients returned/discharged straight home



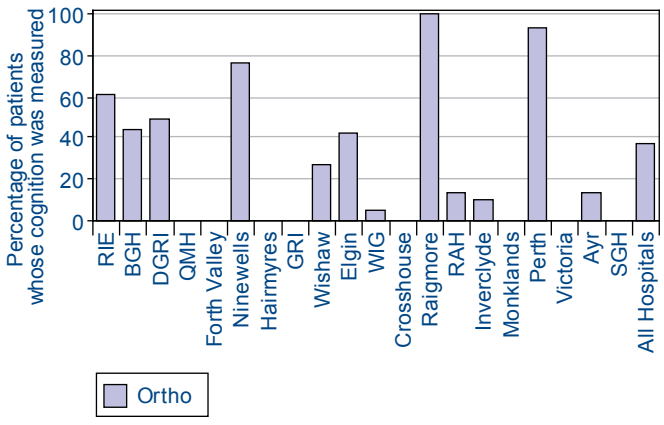
Click here to see more detail in Table 13c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 13d

d) Patients returned/discharged straight to a care home



Adults with Incapacity consent

Eighty-seven (3%) patients were managed conservatively. Of the remaining 2621 patients who were treated surgically, 808 (31%) were authorised for treatment using Adults with Incapacity. This varied from 24% to 44% across hospitals. Patients whose treatment was authorised using Adults with Incapacity were only slightly more likely to have their cognition measured in acute orthopaedic care (38% versus 32%).

Did the patient appear confused?

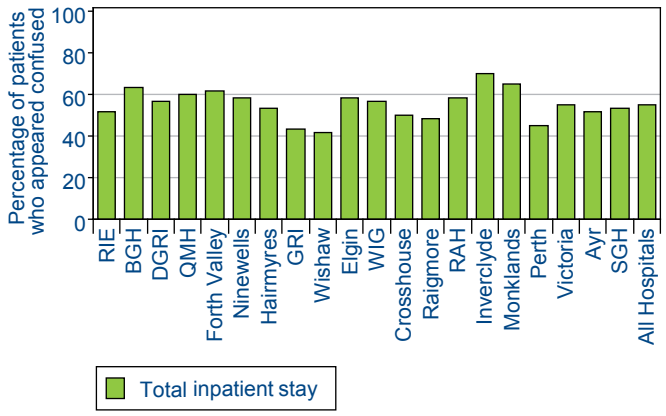
Acute confusion (delirium) is a common presentation in older fracture patients. It is well known that staff fail to recognise delirium and consequently may miss opportunities to investigate and correct underlying causes of the confusion [3,9,11]. Confusion is, of course, frequently a marker of underlying dementia. Effective communication with carers and relatives at an early stage of the patient's admission may help inform the assessment of confusion as and when it arises.

Approximately two-thirds of confused patients whose type of confusion was documented were noted as having dementia, and one-third delirium. Only two percent were recorded as both. Type of confusion was not recorded for 16% of confused patients.

Fig. 14: Did the patient appear confused?

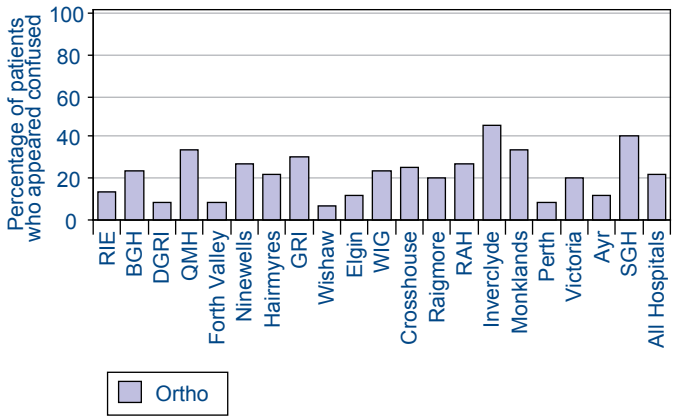
Click here to see more detail in Table 14a

a) All patients during their total inpatient stay



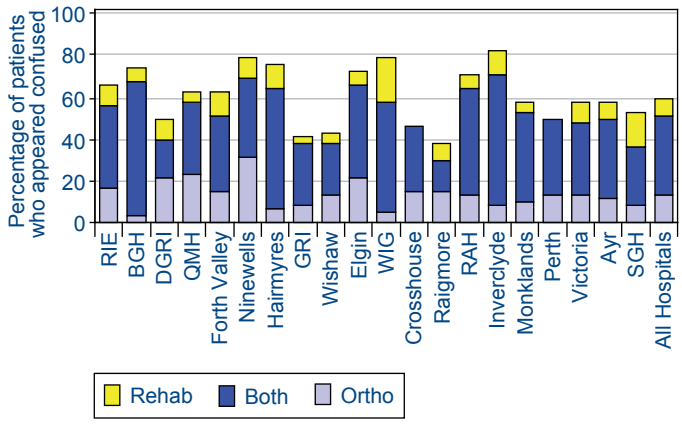
Click here to see more detail in Table 14b

b) Patients returned/discharged straight home



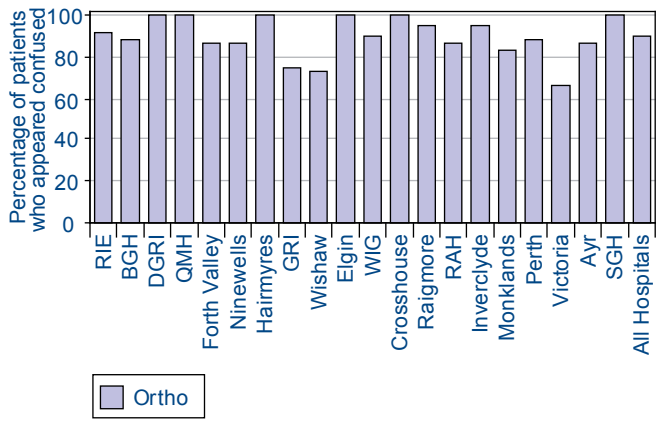
Click here to see more detail in Table 14c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 14d

d) Patients returned/discharged straight to a care home



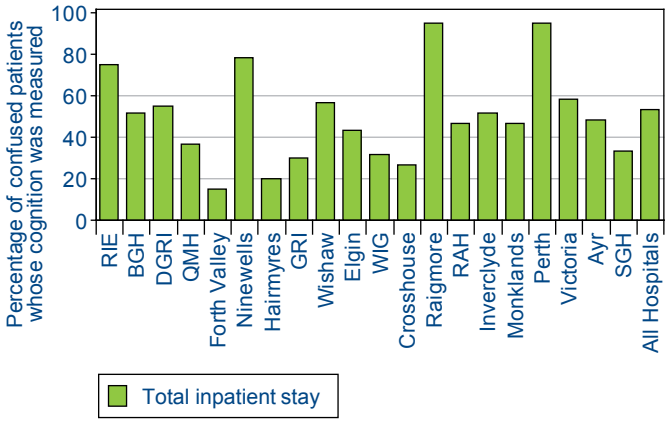
Predictably, confusion was less frequent amongst patients who were discharged straight home. Most patients who were documented as confused in a rehabilitation unit had already had their confusion documented whilst in acute orthopaedic care.

Overall, patients who were confused were more likely to have their cognition measured in acute orthopaedic care (39% versus 28% if not confused) and in rehabilitation care (69% versus 46%). Fig. 15 shows the percentage of confused patients who had their cognition measured at some stage of their inpatient stay.

Fig. 15: How many confused patients had their cognition measured?

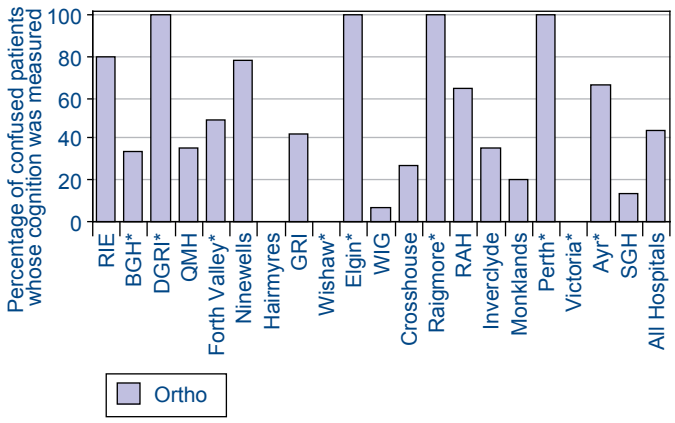
Click here to see more detail in Table 15a

a) All patients if confused during their orthopaedic stay



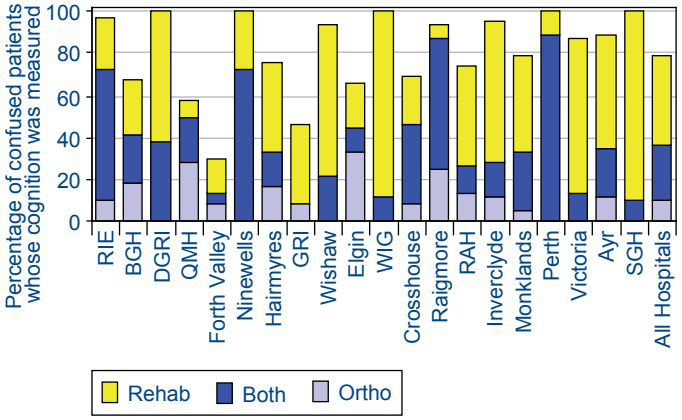
Click here to see more detail in Table 15b

b) Patients who were confused in orthopaedic care who were returned/discharged straight home



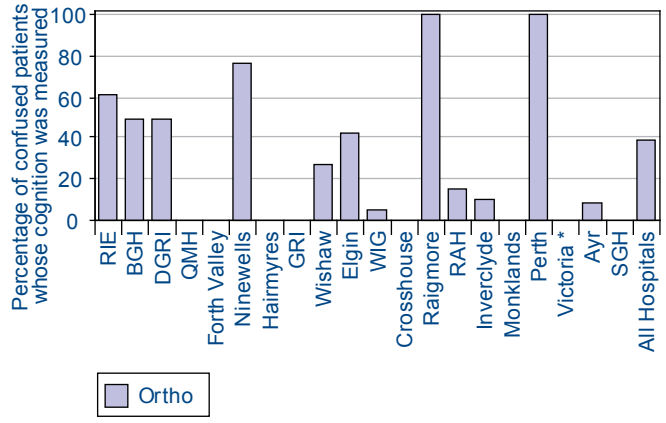
Click here to see more detail in Table 15c

c) Patients who were confused whilst in rehabilitation



Click here to see more detail in Table 15d

d) Patients who were confused in orthopaedic care who were returned/discharged straight to a care home



Data from hospitals marked with an asterisk are based on samples of less than five confused patients.

Forty-eight percent of patients with documented confusion were assessed by medical staff during their inpatient stay specifically for this complaint. Patients with confusion who were discharged direct to care homes were less likely to have their confusion specifically reviewed by medical staff (19%) compared to those discharged to their own house (73%) or to a rehabilitation setting (68%).

Other actions for confusion

Two percent of patients who were confused in acute orthopaedic care were referred to psychiatry whilst in acute orthopaedic care. Of those who were documented as confused after discharge to rehabilitation care 13% were referred to psychiatry.

Eleven percent of confused patients were prescribed new sedation for their confusion in acute orthopaedic care. We were not resourced to comment on the appropriateness of sedation use. Sedation should only be used as a last resort in the management of confused patients. More patients who were discharged straight home were prescribed new sedation (28%) than those discharged to a care home (7%). Altogether 12% of confused patients in rehabilitation care were prescribed new sedation for their confusion at some stage in their inpatient stay. Five percent were prescribed new sedations in orthopaedic care, five percent in rehab care and a further two percent in both.

Bone protection

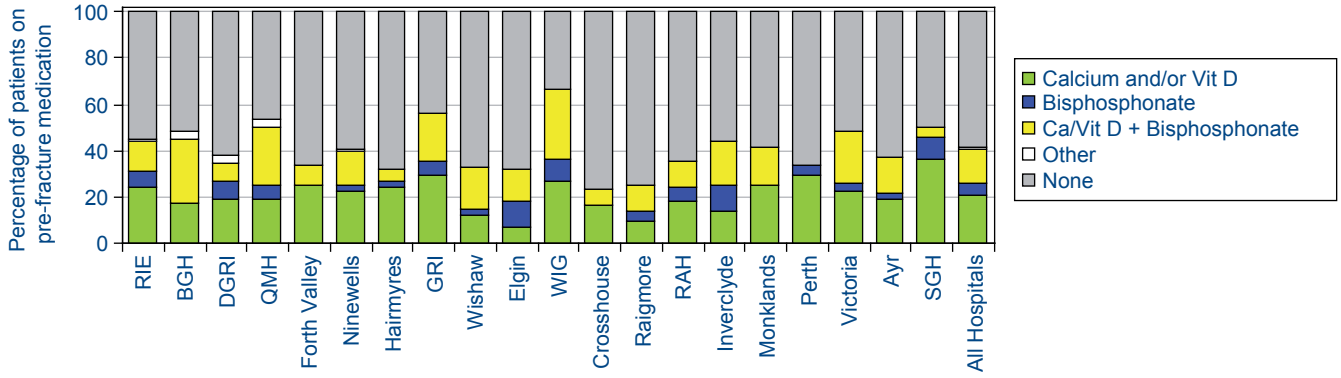
Pre-fracture medications for bone health

In addition to the assessment of falls risk, integral to the prevention of future fractures is the risk assessment and treatment of osteoporosis. At least 33% of patients in the present audit were documented as having experienced a fragility fracture prior to their current hip fracture, although there may be underestimation in some units if previous fractures are not well-documented in the patients' past medical history. Meta-analysis has shown that having a previous fracture approximately doubles a person's risk of experiencing a further fracture, particularly in the year following the primary event [3,12,13]. Hence any presentation of a first fracture is an ideal opportunity to assess for osteoporosis and refer for treatment as appropriate. It should be remembered that not every fracture patient will have osteoporosis as defined by bone densitometry results.

Fig.16: Pre-fracture medications for bone health

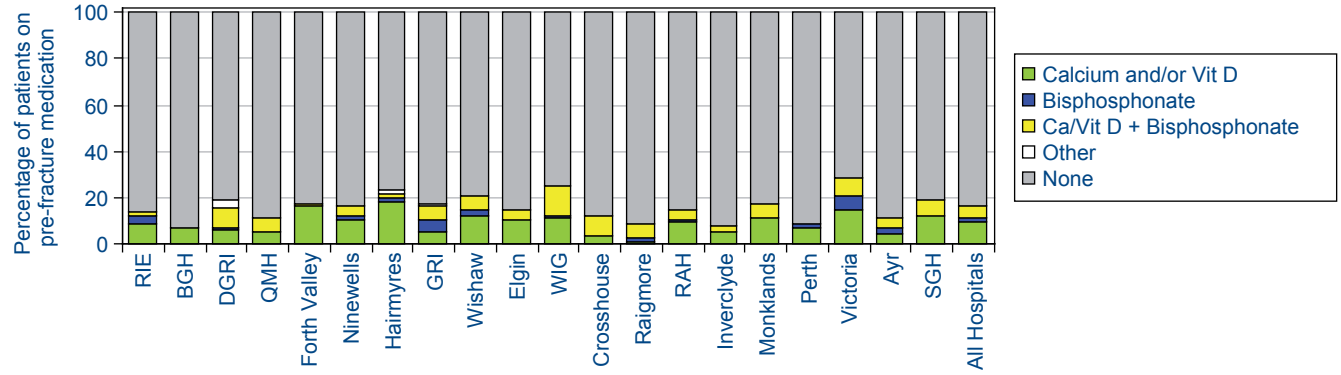
a) Previous history of fragility fractures

Click here to see more detail in Table 16a



b) No previous history of fragility fractures

Click here to see more detail in Table 16b



Within hospitals, there has been little overall change in the proportion of patients with previous fragility fractures who were on pre-fracture medications since SHFA's previous audit in 2006. Nationally, however, the proportion has increased because the four central Glasgow hospitals (which have higher proportions of patients on pre-fracture medications) have now been included.

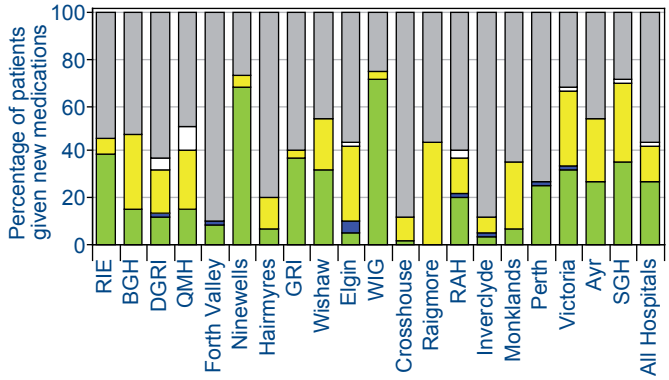
New medications for bone health – patients not already on medications

Half of the operating hospitals participating in the audit reported that they had (or were developing) ward protocols for the prescribing of bone protection medication. There is now established evidence for fracture reduction in osteoporotic patients using a variety of therapeutic medications [12,13]. Whilst admission with hip fracture presents an ideal opportunity to commence treatment, it is acknowledged that some units will have deliberate policies not to prescribe treatment until a later date (e.g. six weeks post-operatively or following an out-patients review from the fracture liaison service).

Fig. 17: New medications for bone health – patients not already on medications

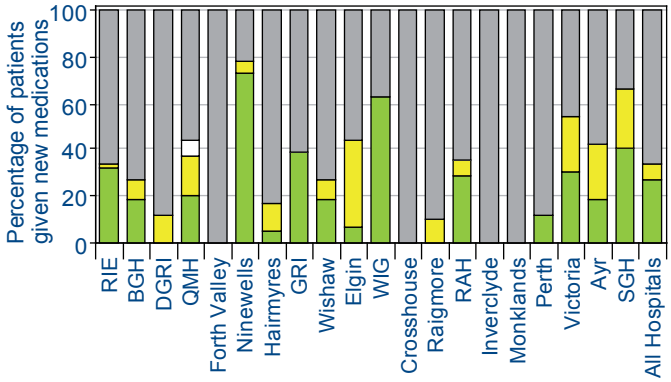
Click here to see more detail in Table 17a

a) All patients during their total inpatient stay



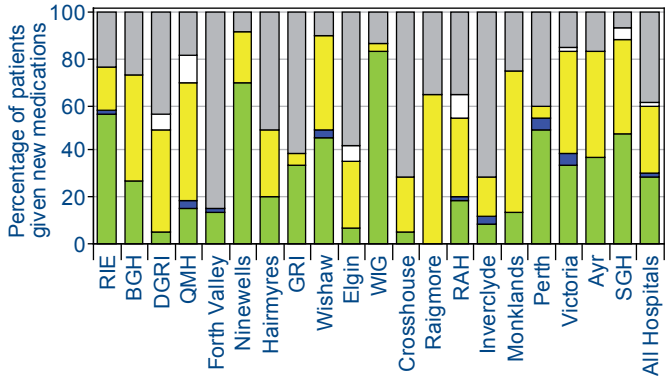
Click here to see more detail in Table 17b

b) Patients returned/discharged straight home



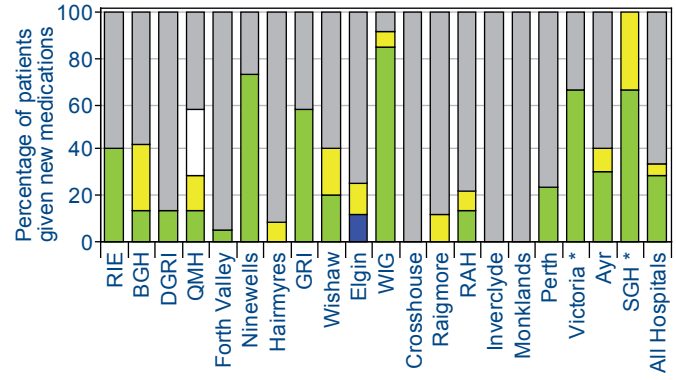
Click here to see more detail in Table 17c

c) Patients discharged to rehabilitation (new medications given in ortho *or* rehab care)



Click here to see more detail in Table 17d

d) Patients returned/discharged straight to a care home



Data from hospitals marked with an asterisk are based on samples of less than five patients.

Sixty-one percent of patients not on pre-fracture medications for bone health who went to a rehabilitation unit were put on medications for bone health by the time they left rehabilitation care, compared to 35% of those who were discharged from acute orthopaedic care straight home or straight to a care home. In care homes, supervised administration of osteoporosis medications should allow many patients to get treatment despite their significant co-morbidities.

New medications for bone health – patients already on medications

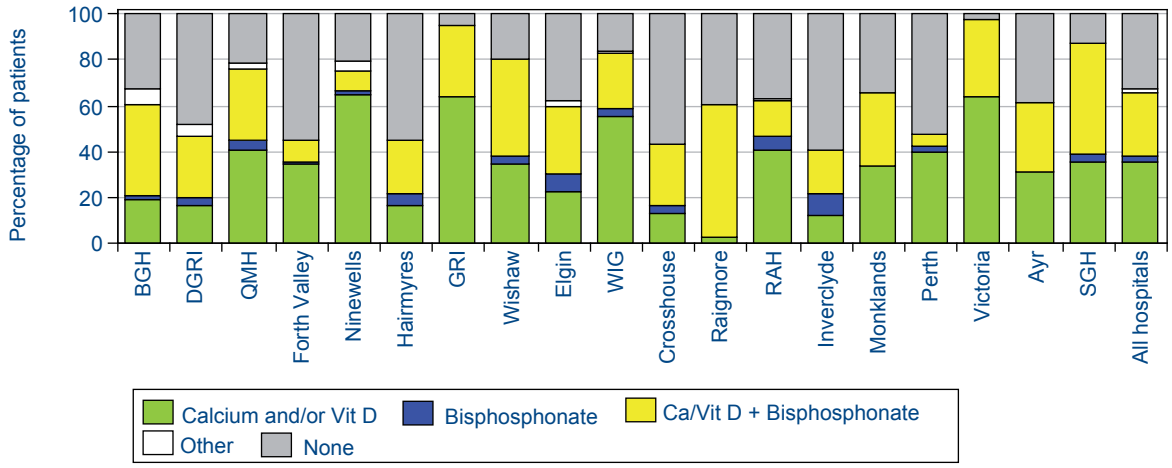
Ten percent of all patients already on medications for bone health prior to their admission for hip fracture were given additional medications (Calcium/Vitamin D or bisphosphonate) whilst in acute orthopaedic care. In patients who were discharged to rehabilitation, this increased to 23% by the time they were discharged from rehabilitation care (8% given additional Calcium/Vitamin D, 12% bisphosphonate, 3% other medications). Medication changes may be initiated by a fracture liaison/osteoporosis service or by ward medical staff, depending on the unit.

Medications for bone health at 120 days post-admission

Review data was collected from hip fracture patients at 120 days post-admission (predominantly by telephone). The percentage of patients/carers reporting prescription of bone protection medications at 120 days post-admission was higher than it was pre-fracture, even when compared to those who had had previous fragility fractures.

Fig. 18: Medications for bone health at 120 days post-admission

Click here to see more detail in Table 18



Excludes patients who died or were lost to review audit. Data are predominantly for patients admitted during April to July 2008 (August and September patients were not reviewed). RIE is excluded because RIE patients were not reviewed after they had been discharged from acute orthopaedic care. Although GRI and Victoria patients admitted during April to July were also not reviewed at 120 days, we present equivalent data for patients admitted during January to March 2008.

Osteoporosis nurses and fracture liaison

A fracture liaison service (FLS) has been recognised in the literature to be an effective method of delivering high quality targeted assessment and treatment for secondary prevention of fracture [3,9].

Just over half of the acute orthopaedic units reported that they have an osteoporosis nurse and/or a fracture liaison person. Only one percent of patients were *referred* to a fracture liaison service or an osteoporosis-type service during their total inpatient stay. However, this is not surprising considering that FLS/osteoporosis services usually have an 'automatic pickup' system in which patients are identified from wards/clinics/radiology rather than a referral system and have a variety of criteria to see patients. Some see all hip fracture patients whilst others have age restrictions. In some units the patients will be seen whilst inpatients, whilst in others the contact with the patient will be made post-discharge.

Most osteoporosis/FLS nurses are able to refer appropriate patients for DEXA scanning. Some can also order blood tests and refer to other specialities (e.g. rheumatology).

DEXA scans

All operating hospitals have access to a DEXA scanner, and waiting times ranging from 0-20 weeks. In some units there is a policy for not offering DEXA to hip fracture patients, but instead to commence bisphosphonate (or alternative treatments) in all cases. DEXA is reserved for assessment of osteoporosis in other vulnerable groups of people other than those who have hip fractures.

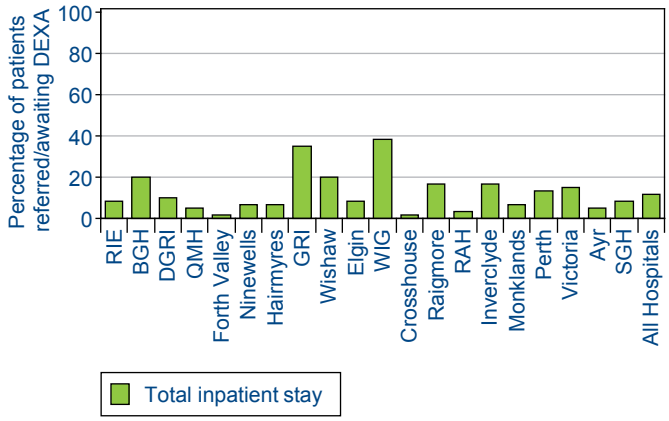
Thirteen percent of patients not on pre-fracture medications for bone health were referred for a DEXA scan (or were awaiting the results of a previously-ordered DEXA scan), compared to eight percent of those who were already on pre-fracture medications for bone health prior to fracture.

Patients who were discharged straight home were more frequently referred for DEXA scanning than those discharged to a care home (Fig. 19). Rehabilitation patients were referred from both acute orthopaedic care and rehabilitation care.

Fig. 19: Referrals for (or already awaiting) DEXA scan/result

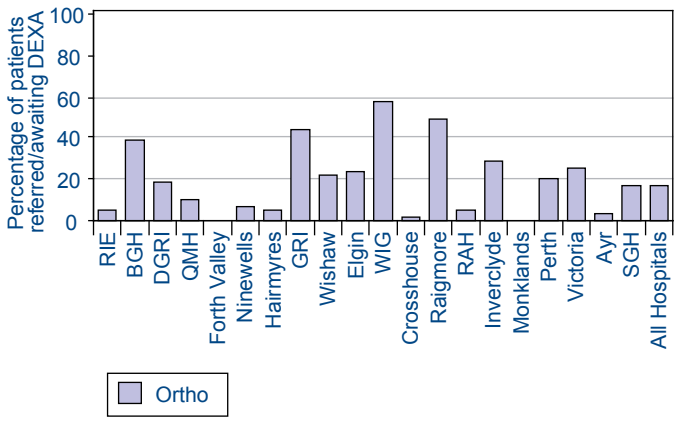
Click here to see more detail in Table 19a

a) All patients during their total inpatient stay



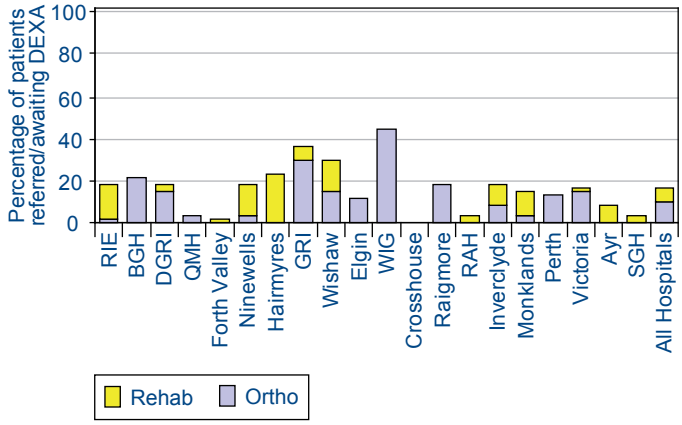
Click here to see more detail in Table 19b

b) Patients returned/discharged straight home



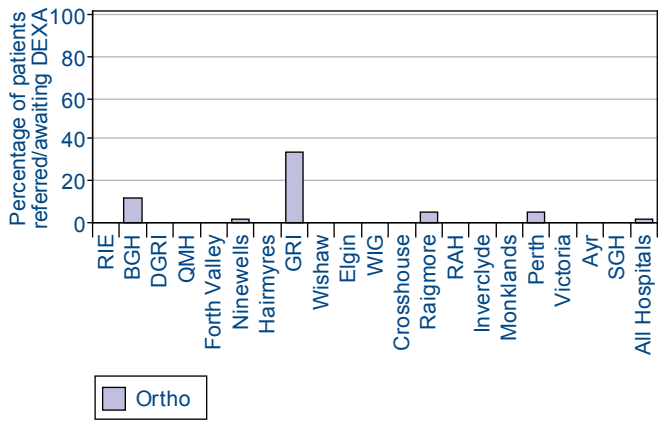
Click here to see more detail in Table 19c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 19d

d) Patients returned/discharged straight to a care home

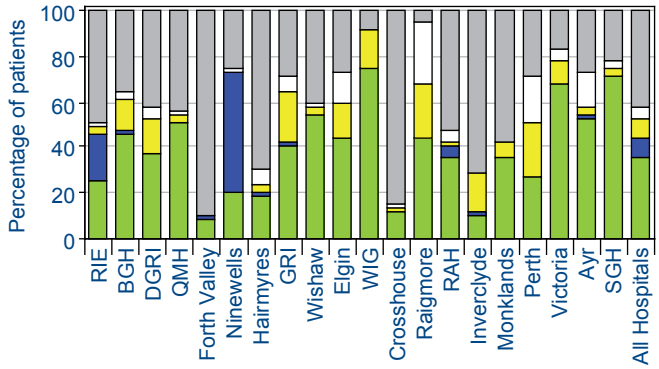


Other bone protection actions

Fig. 20: Bone protection actions – patients not already on medications

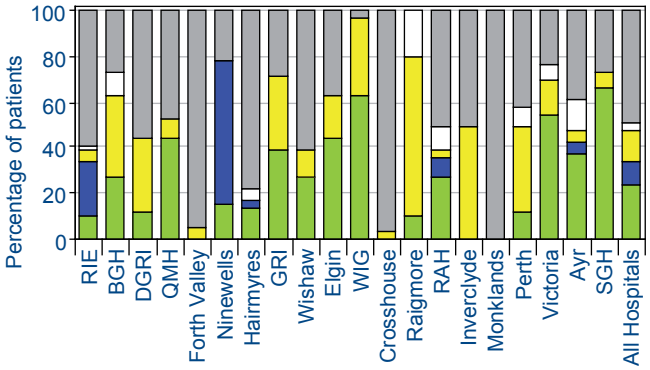
Click here to see more detail in Table 20a

a) All patients during their total inpatient stay



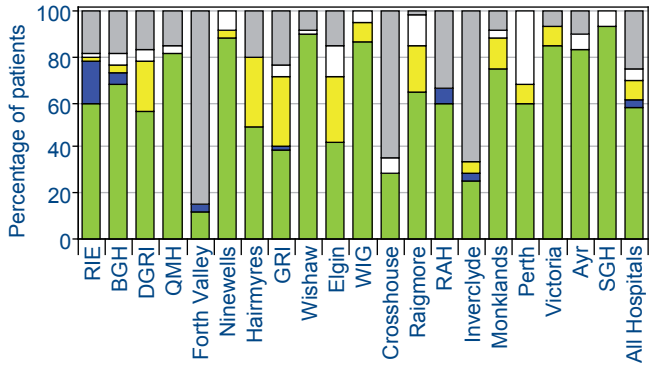
Click here to see more detail in Table 20b

b) Patients returned/discharged straight home



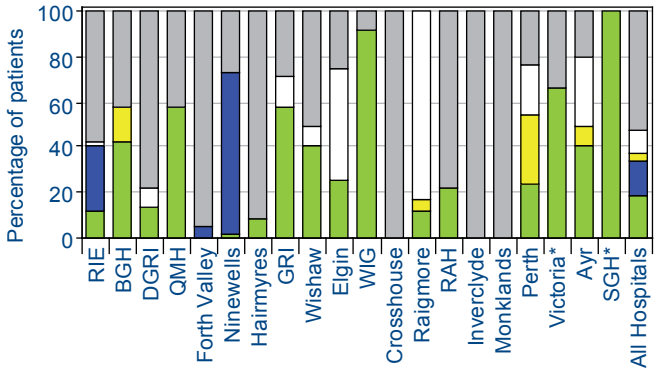
Click here to see more detail in Table 20c

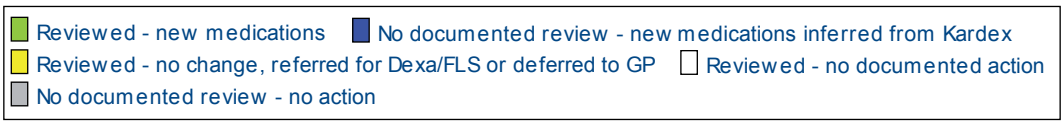
c) Patients discharged to rehabilitation (review/actions in ortho or rehab care)



Click here to see more detail in Table 20d

d) Patients returned/discharged straight to a care home





Actions were deferred to GPs in only one percent of patients in acute orthopaedic care (maximum 6%, at Raigmore). Actions were even less frequently deferred to GPs from rehabilitation.

Only three orthopaedic units did not have a pharmacist regularly reviewing patients' drug Kardex.

Nutritional assessments and dietary outcomes

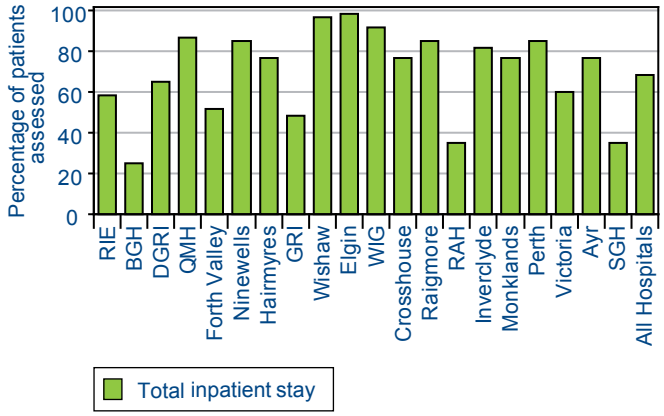
Poor nutritional state is a recognised risk factor for fracture. It is also acknowledged that many hospital inpatients do not receive adequate nutritional intake for a variety of reasons [1,3,8]. This in turn may impede recovery from fracture. It is important, therefore, for staff to be alert to the dietary needs of their patients and to affect solutions to poor nutritional intake where possible.

Nutritional assessment

Fig. 21: Was a nutrition assessment carried out?

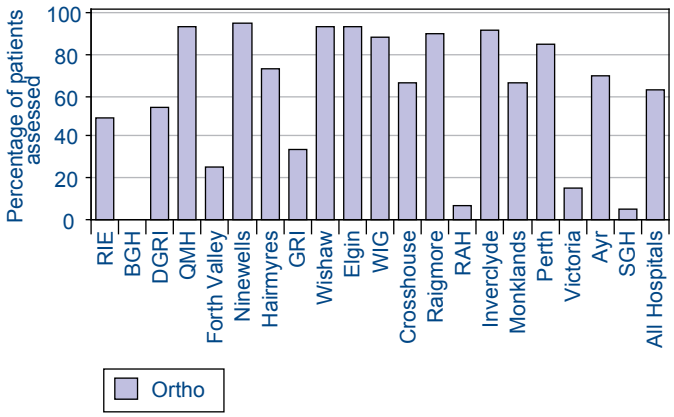
Click here to see more detail in Table 21a

a) All patients during their total inpatient stay



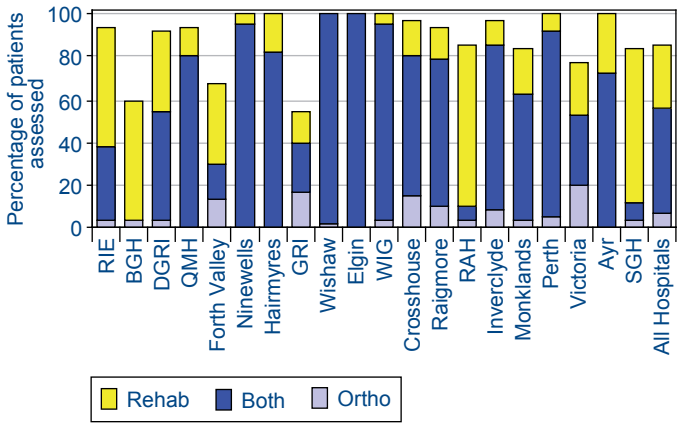
Click here to see more detail in Table 21b

b) Patients returned/discharged straight home



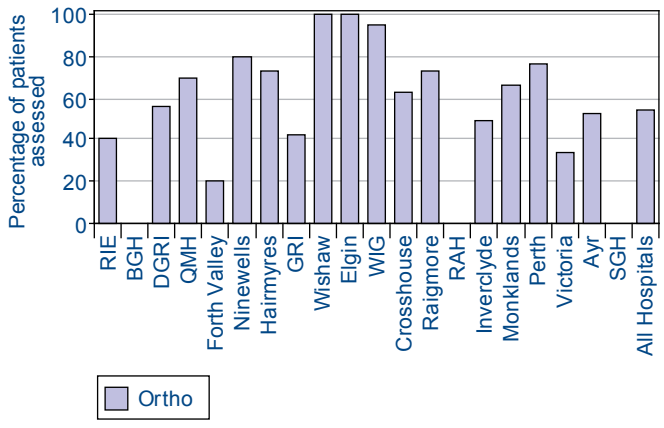
Click here to see more detail in Table 21c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 21d

d) Patients returned/discharged straight to a care home



In the 12 hospitals that assessed the nutritional state of the majority of their patients in acute orthopaedic care, 69% were assessed as low risk, 20% as medium risk and 11% as high risk at first nutritional assessment. Patients who lived in a care home prior to fracture were twice as likely to be nutritionally assessed as high risk at first nutritional assessment compared to patients who were admitted from their own homes (19% versus 9%).

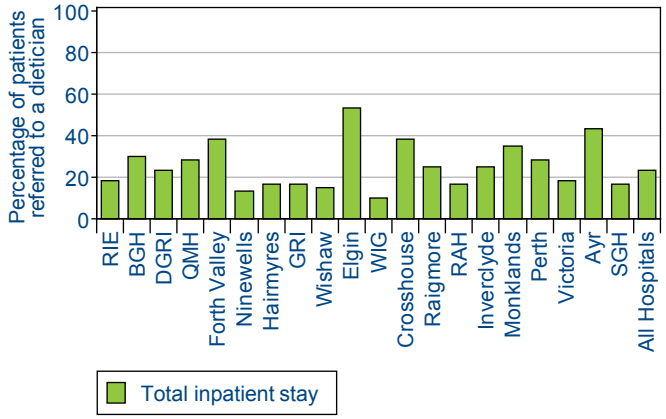
Referrals to a dietician

Some units have an established policy that only patients assessed as being at a certain risk, should be referred for a dietetic review.

Fig. 22: Was the patient referred to a dietician?

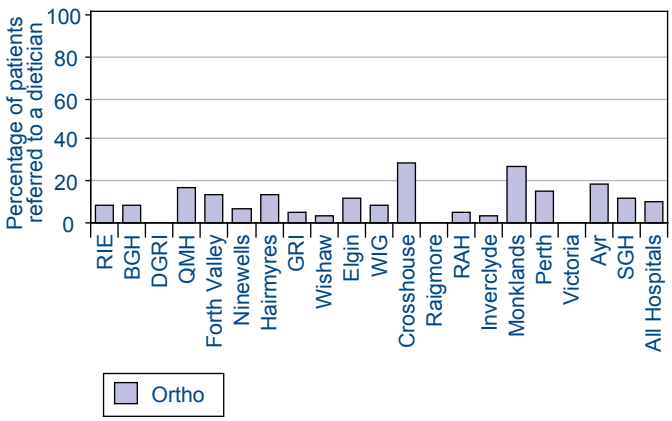
Click here to see more detail in Table 22a

a) All patients during their total inpatient stay



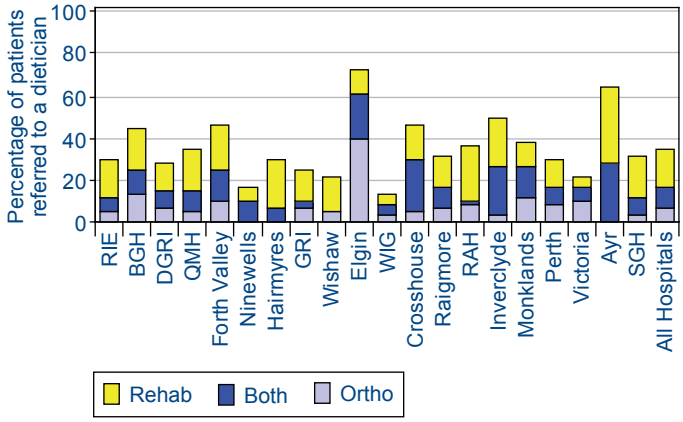
Click here to see more detail in Table 22b

b) Patients returned/discharged straight home



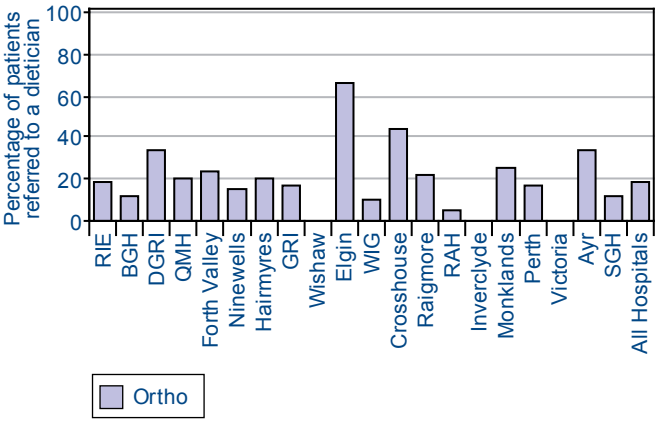
Click here to see more detail in Table 22c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 22d

d) Patients returned/discharged straight to a care home



Patients identified as high risk at first nutritional assessment were more likely to be referred to a dietician than those at low risk (80% versus 13% in orthopaedic care; 80% versus 12% for patients in rehabilitation care). Note that we recorded risk at first nutritional assessment but referrals to dietician at any point.

96% of patients referred to a dietician were seen.

Dietary outcomes - supplements and special diet

The literature suggests that oral protein and energy feeds offer the best nutritional support and may influence a variety of patient outcomes such as complications, length of stay and mortality [3,8,9]. Some units will treat patients with supplements/special diets following nutritional assessment by nurses whilst others will wait for advice from a dietician. Simple measures such as ensuring adequate staff to aid feeding at meal times may also be an effective method of ensuring better patient outcomes [3].

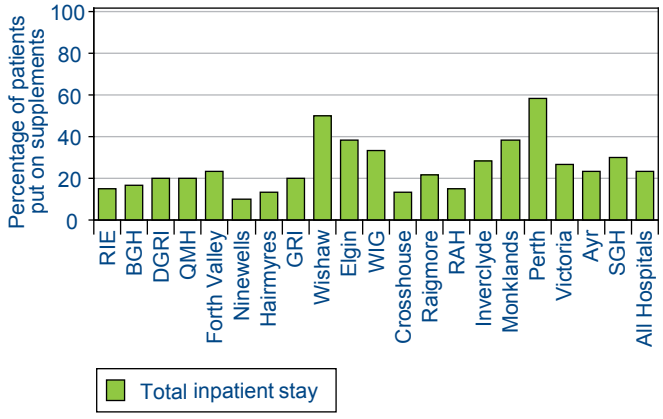
Most centres provide special diets/supplements dependent on the outcome of specific dietary assessment. However, within the 'profile' data, two operating units reported routine use of special diet for hip fracture patients (although this was only reflected in patient casenotes for one hospital - see Fig. 24). Three (5%) rehabilitation units reported routine administration of supplements and two (3%) reported routine use of a special diet for hip fracture patients.

Figs. 23 and 24 reflect routine actions, or actions taken following dietary assessments that may have been carried out by nursing or dietetic staff.

Fig. 23: Were patients given dietary supplements?

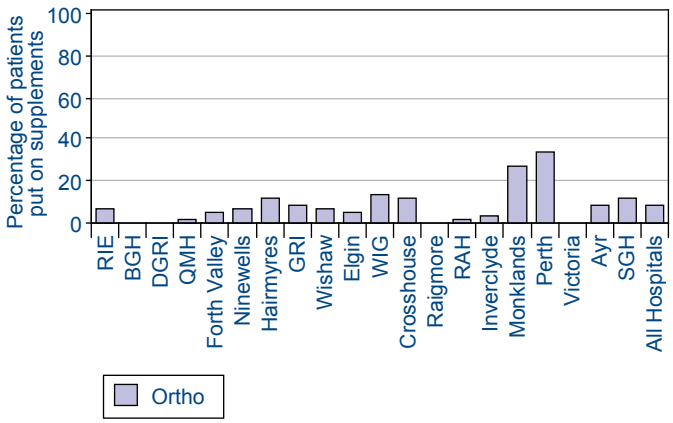
Click here to see more detail in Table 23a

a) All patients during their total inpatient stay



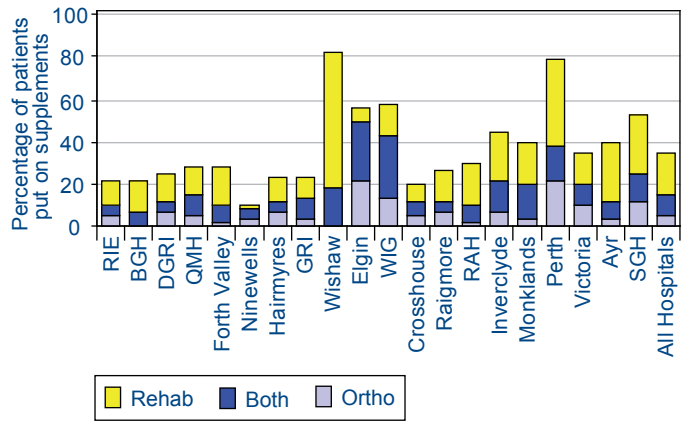
Click here to see more detail in Table 23b

b) Patients returned/discharged straight home



Click here to see more detail in Table 23c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 23d

d) Patients returned/discharged straight to a care home

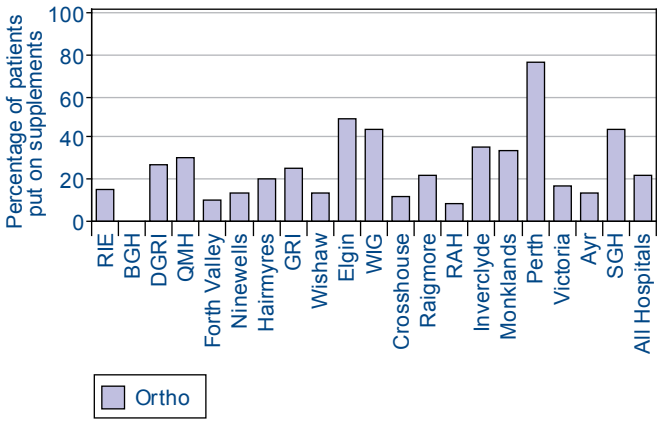
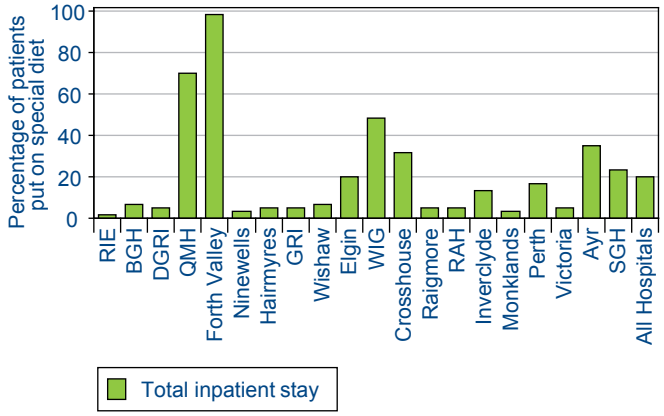


Fig. 24: Were patients put on a special diet?

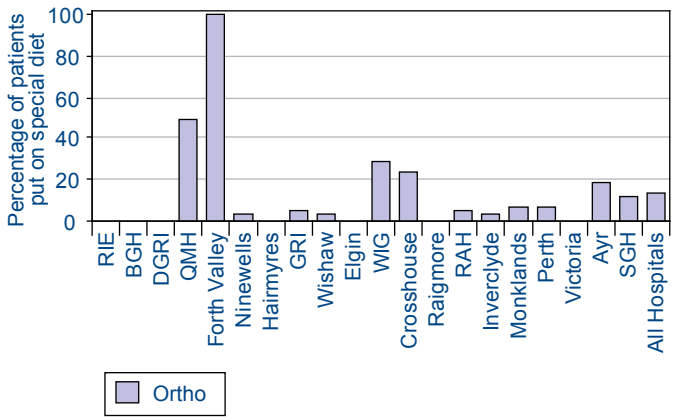
Click here to see more detail in Table 24a

a) All patients during their total inpatient stay



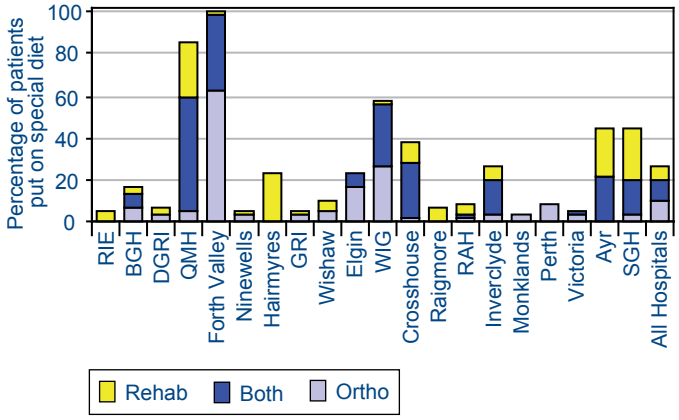
Click here to see more detail in Table 24b

b) Patients returned/discharged straight home



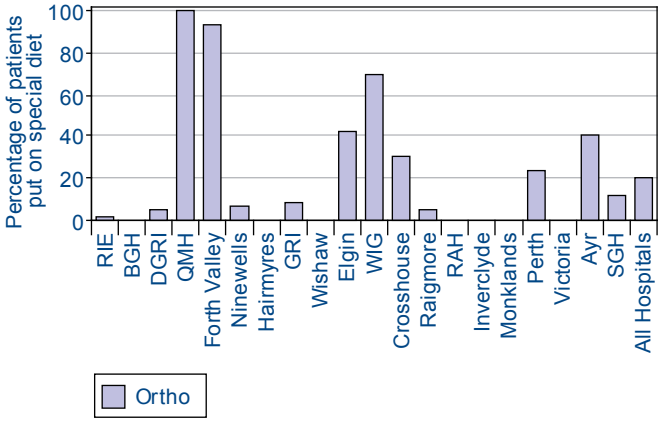
Click here to see more detail in Table 24c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 24d

d) Patients returned/discharged straight to a care home



Dietary advice

Seven percent of all patients were documented as being given dietary advice during their inpatient stay, often whilst in rehabilitation care. General dietary advice will be given by nurses and dieticians during assessments and inpatient stays but is perhaps rarely documented as a specific action.

Weight

Only three acute orthopaedic units reported routine weighing of their patients, but all COE-run units and almost all GP-run units reported routine weight checks on patients.

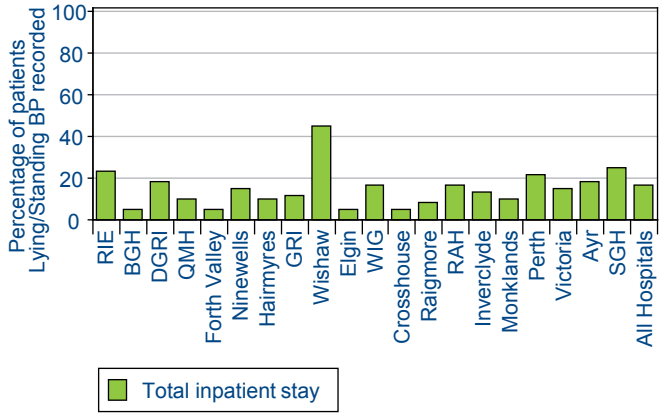
Lying/standing blood pressure

As previously discussed, causes of falls are often multi-factorial. Consequently, a number of possible investigations may be indicated to further explore particular underlying diagnoses. A variety of medications are known to influence falls risk (e.g. sedatives, anti-depressants, cardiac medications), often through their tendency to cause postural hypotension [2,8,14,15]. Assessment for the presence of postural hypotension is a relatively easy procedure, accepting the limitations of assessment in immobile patients, and is recommended in recent falls literature [2,6-8].

Fig. 25: Were lying/standing blood pressures measured?

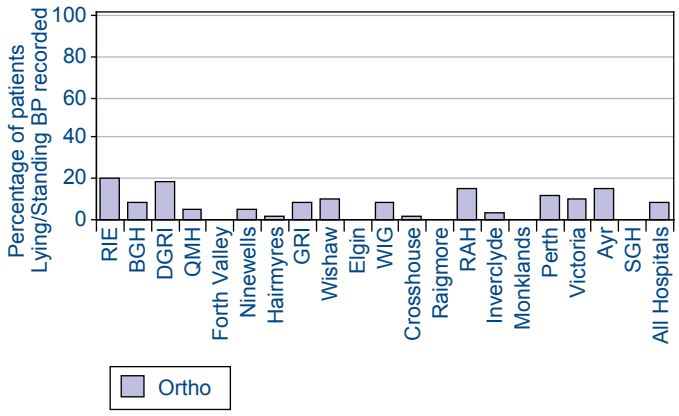
Click here to see more detail in Table 25a

a) All patients during their total inpatient stay



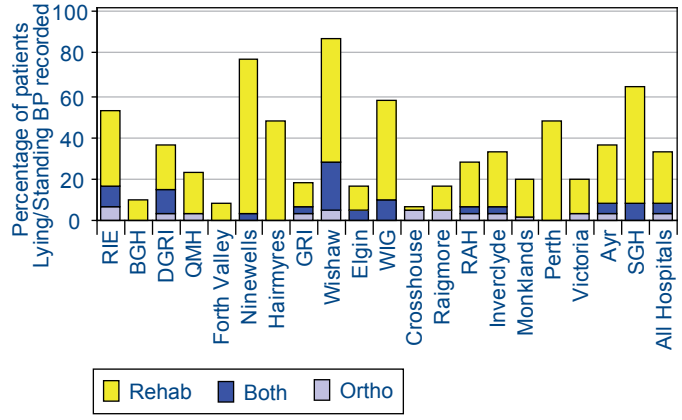
Click here to see more detail in Table 25b

b) Patients returned/discharged straight home



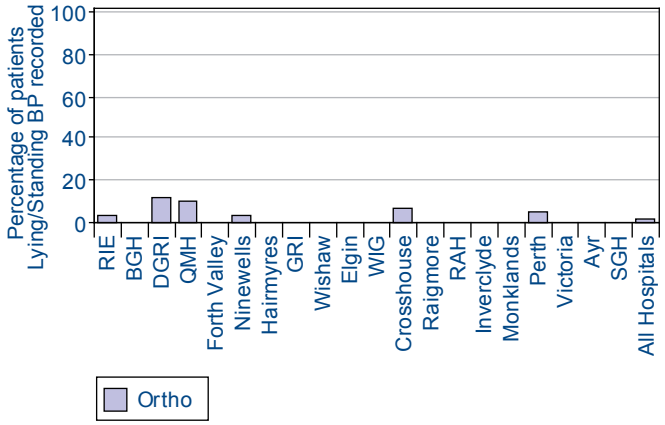
Click here to see more detail in Table 25c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 25d

d) Patients returned/discharged straight to a care home



Physiotherapy

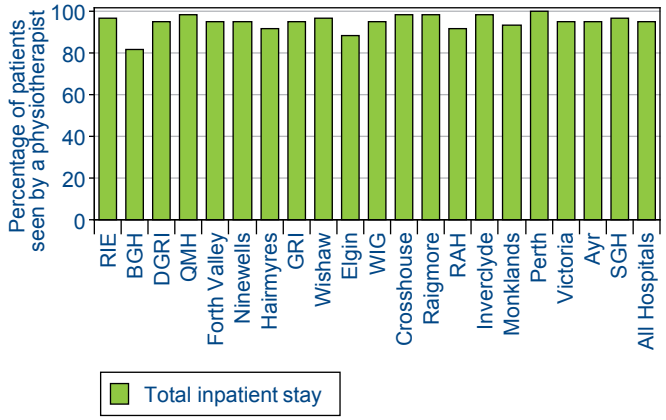
Loss or partial loss of mobility is a common and serious complication of hip fracture. It is accepted that early mobilisation post-procedure is normal practice for the vast majority of hip fracture patients. This also reduces thrombosis complications. In addition, effective falls prevention includes targeted gait and balance exercises, best delivered by trained physiotherapists [2-4,6,8-10]. This optimises timely discharge of patients.

Fig. 26 reflects the prominent role physiotherapists have at each stage of the patient journey.

Fig. 26: Were patients seen by a physiotherapist?

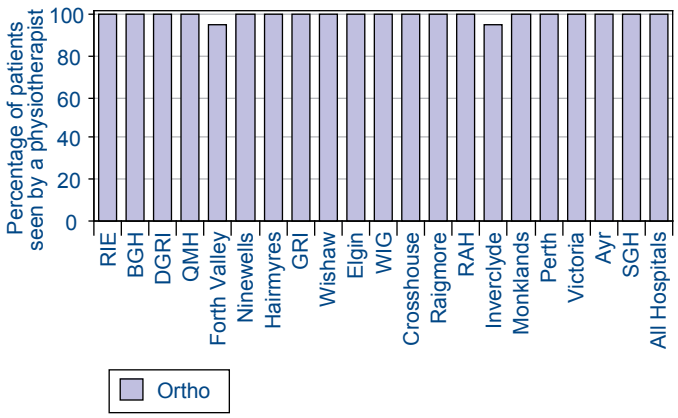
Click here to see more detail in Table 26a

a) All patients during their total inpatient stay



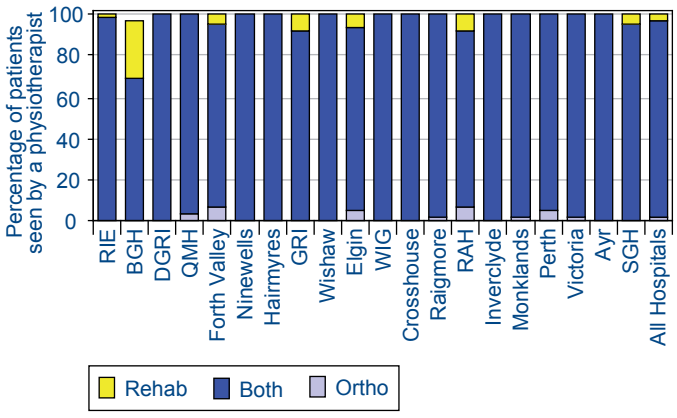
Click here to see more detail in Table 26b

b) Patients returned/discharged straight home



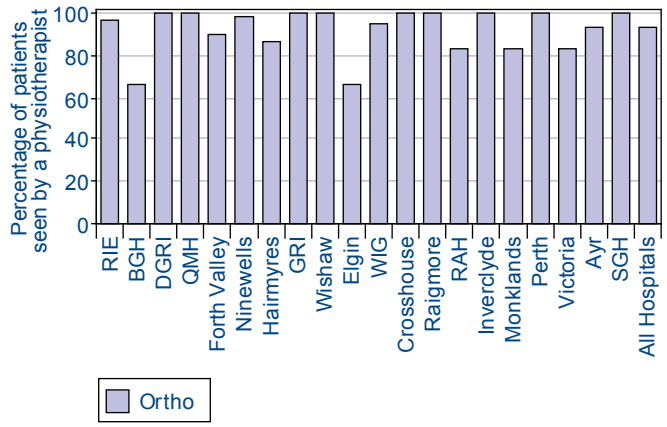
Click here to see more detail in Table 26c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 26d

d) Patients returned/discharged straight to a care home



Weekend physiotherapy cover

Ten of the twenty acute orthopaedic units reported no weekend physiotherapy cover for hip fracture patients. In those units reporting weekend cover, most was to provide care for initial mobilisers or to those patients where it would expedite discharge that day.

Seventy five percent of orthopaedic units reported that, in the absence of physiotherapists, nurses would mobilise patients if it were their first post-op day at the weekend. All rehabilitation units reported nurses would mobilise patients at the weekend.

Occupational therapy

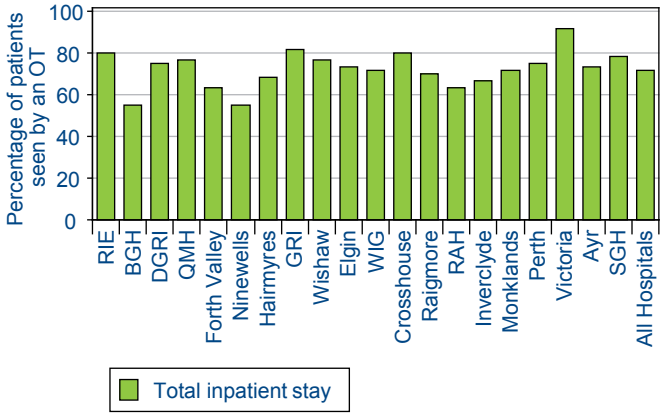
An assessment of patients' ability to perform the activities of daily living forms part of a rehabilitation and falls assessment. Information resulting from an occupational therapy assessment helps to inform and support the discharge planning process.

Patients who were discharged directly to a care home were less likely to be assessed. This may reflect greater pre-admission dependency levels in this group, although opportunities to maximise independency may have been lost by not assessing some care home individuals.

Fig. 27: Were patients seen by an occupational therapist?

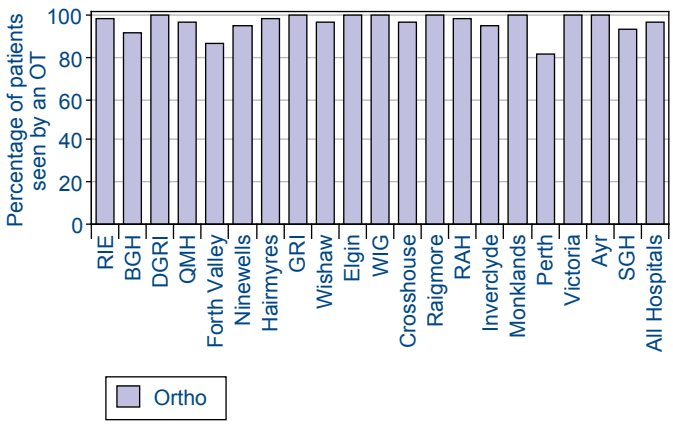
Click here to see more detail in Table 27a

a) All patients during their total inpatient stay



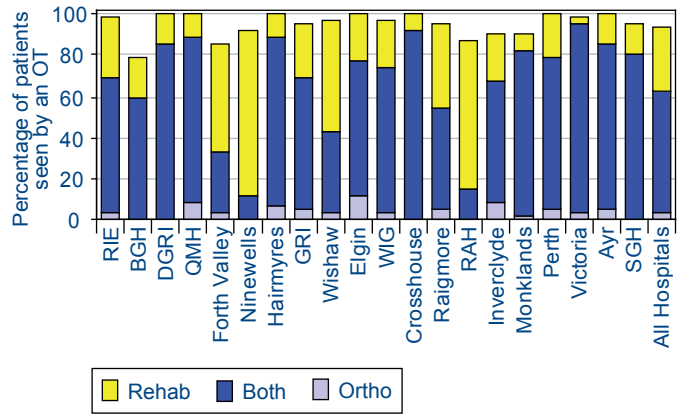
Click here to see more detail in Table 27b

b) Patients returned/discharged straight home



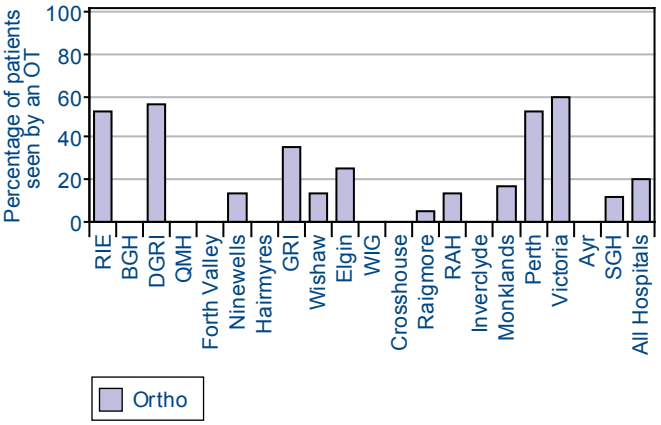
Click here to see more detail in Table 27c

c) Patients discharged to rehabilitation



Click here to see more detail in Table 27d

d) Patients returned/discharged straight to a care home



Environmental and home visits

An environmental visit was defined as an occupational therapist visiting a patient's home in order to assess the suitability of the environment. On home visits, the therapist *accompanies* the patient home to assess their functional capabilities within their own house. The literature suggests that identification and modification of environmental hazards may reduce falls risk [2,6,8-10]. For some patients, the environmental or home visit will help inform the discharge team that the patient's home was no longer suitable to meet their care needs and that alternative care (e.g. nursing home) was now required.

Patients returned/discharged straight home

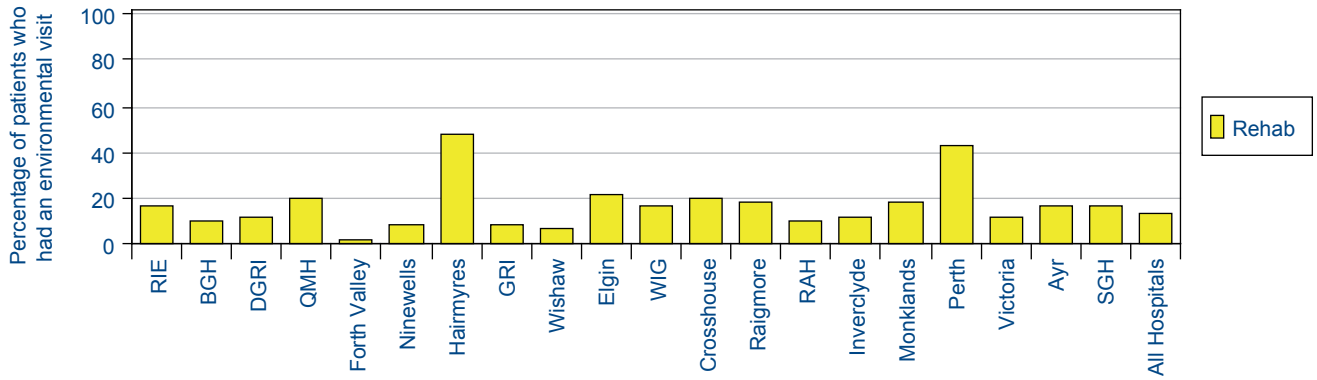
Altogether, five percent of patients discharged straight home from acute orthopaedic care had had an environmental visit (up to 13% in some hospitals), and eight percent of patients had a home visit (including 36% of RIE patients).

Patients discharged via rehabilitation

Fig.28: Environmental and home visits for rehabilitation patients

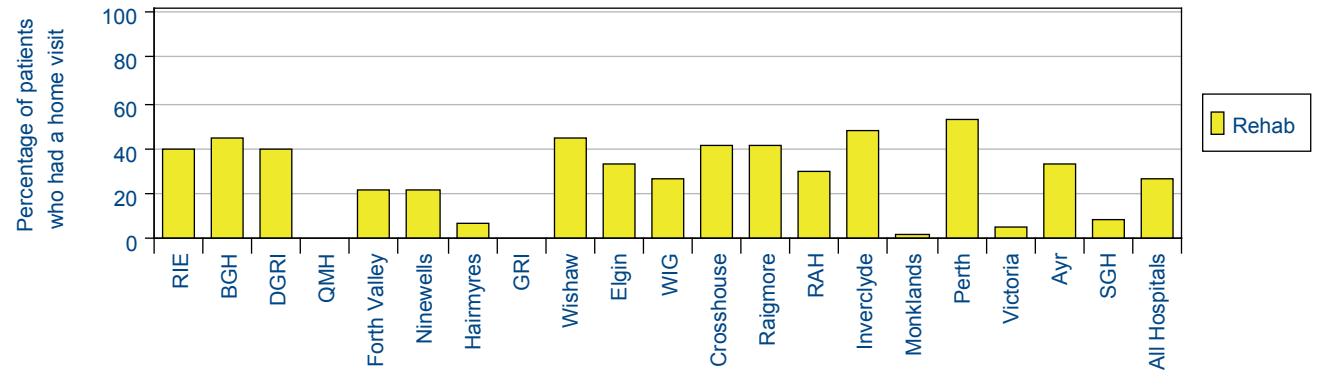
Click here to see more detail in Table 28a

a) Environmental visits



Click here to see more detail in Table 28b

b) Home visits



Compared to patients discharged straight home from acute orthopaedic care, patients who were discharged from a rehabilitation unit were more likely to have had an environmental visit (14% of all rehabilitation patients, 18% of those discharged home from rehabilitation) or a home visit (26% of all rehabilitation patients, 39% of those discharged home from rehabilitation). Three percent of rehabilitation patients had both an environmental and home visit.

Supported discharge teams

Supported discharge teams (SDTs) are multi/interdisciplinary teams who provide short-term care post-discharge – commonly for up to six weeks.

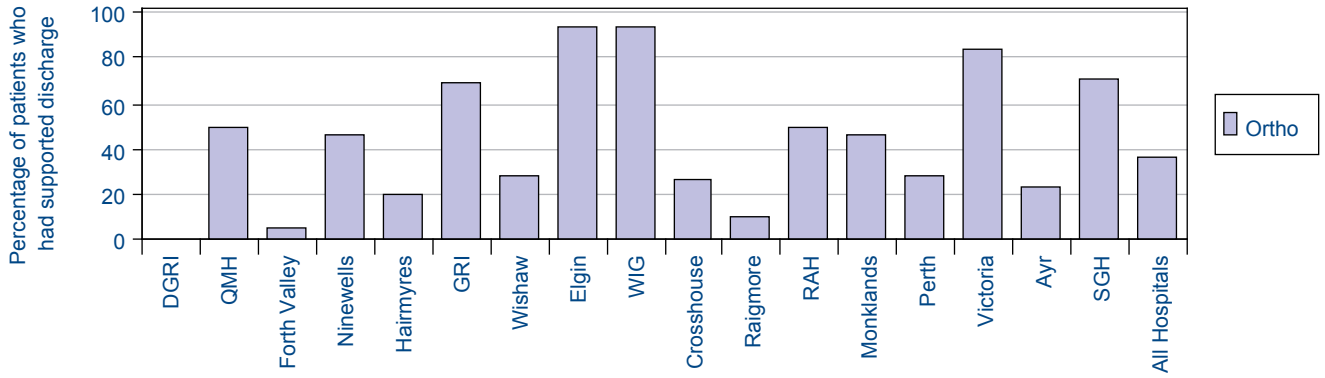
Increasingly, SDTs are being used to continue rehabilitation, nursing and support to patients returning home from hospital. They can often reduce length of stay in hospital, and can provide valuable links between primary and secondary care services.

Seventeen of the 20 participating operating units have an SDT. All SDTs will accept hip fracture patients. Only four SDTs reported that they support hip fracture patients back to a nursing home. Fig. 29 reflects the proportion of patients who were accepted during their inpatient stay by SDT for support in their own home on discharge.

Fig.29: Supported discharge

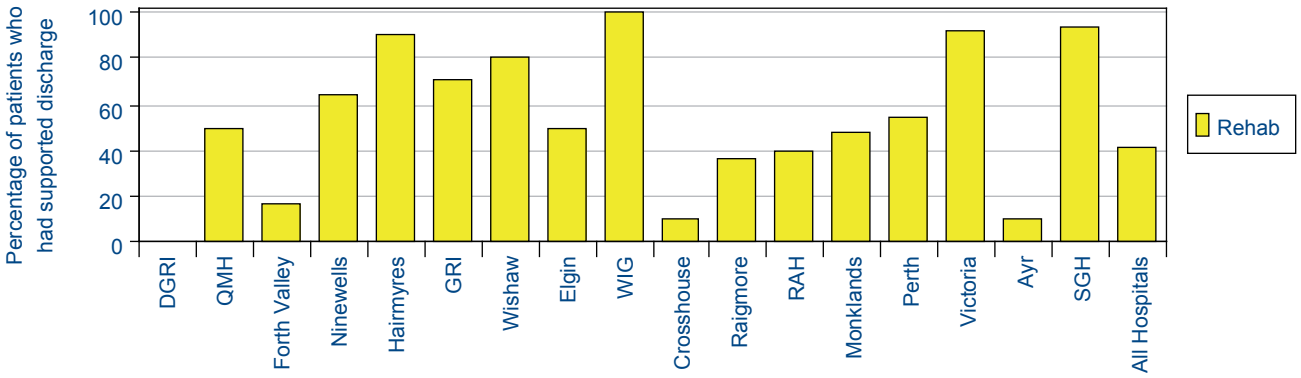
a) Patients returned/discharged straight home

Click here to see more detail in Table 29a



b) Patients who were discharged home via rehabilitation

Click here to see more detail in Table 29b



Hospitals without SDTs as defined above (BGH, Inverclyde and RIE) are excluded from these barcharts. REACH and MATCH were included as SDTs at Forth Valley and RAH after local consultation.

Acknowledgements

SHFA would like to thank our Local Audit Co-ordinators and their link nurses in off-site rehabilitation units who have collected and verified the data.

Appendix 1: Rehabilitation units and patient inclusion rates

Hospital	Rehabilitation unit (ISD Code)	Number of patients	Percentage of rehabilitation patients included	Main Rehab Specialty
RIE	*Units with three or less patients*	1	0%	
	Royal Victoria Hospital, Edinburgh (S114H)	72	82%	COE
	Astley Ainslie Hospital, Edinburgh (S201H)	83	99%	COE
	Liberton Hospital, Edinburgh (S209H)	4	0%	
	St. John's Hospital, Livingston (S308H)	42	0%	
	Total	**202**	**70%**	
BGH	*Units with three or less patients*	9	22%	
	Hawick Community Hospital (B105H)	4	100%	GP
	Kelso Hospital (B114H)	8	100%	GP
	Hay Lodge Hospital, Peebles (B118H)	6	100%	GP
	Borders General Hospital, Melrose (B120H)	12	100%	COE
	Total	**39**	**82%**	
DGRI	*Units with three or less patients*	17	0%	
	Castle Douglas Hospital (Y101H)	4	0%	
	Dumfries & Galloway Royal Infirmary (Y104H)	29	97%	COE
	Garrick Hospital, Stranraer (Y111H)	6	0%	
	Total	**56**	**50%**	
QMH	*Units with three or less patients*	1	100%	
	Victoria Hospital, Kirkcaldy (F704H)	34	100%	COE
	Total	**35**	**100%**	
Forth Valley	*Units with three or less patients*	3	67%	
	Falkirk & District Royal Infirmary (V102H)	102	99%	Ortho
	Bannockburn Hospital, Stirling (V202H)	4	100%	COE
	Total	**109**	**98%**	
Ninewells	*Units with three or less patients*	12	0%	
	St. Andrews Memorial Hospital (F709H)	8	0%	
	Royal Victoria Hospital, Dundee (T107H)	18	83%	COE
	Blairgowrie Community Hospital (T209H)	4	0%	
	Arbroath Infirmary (T304H)	4	100%	COE
	Stracathro Hospital, Brechin (T312H)	20	95%	COE
	Adamson Hospital, Cupar (T708H)	4	0%	
	Pitkerro Intermediate Care Centre (T7232)	9	0%	
	Total	**79**	**48%**	
Hairmyres	*Units with three or less patients*	1	0%	
	Hairmyres Hospital, East Kilbride (L302H)	17	100%	COE
	Total	**18**	**94%**	
GRI	Glasgow Royal Infirmary (G107H)	67	99%	Ortho
	Lightburn Hospital, Glasgow (G109H)	10	60%	COE
	Stobhill Hospital, Glasgow (G207H)	9	100%	COE
	Total	**86**	**94%**	
Wishaw	*Units with three or less patients*	5	60%	
	Wishaw General Hospital, Wishaw (L308H)	57	100%	COE
	Total	**62**	**97%**	

Elgin	*Units with three or less patients*	3	67%	
	Chalmers Hospital, Banff (N337H)	5	60%	GP
	Seafield Hospital, Buckie (N431H)	5	20%	GP
	Stephen Cottage Hospital, Dufftown (N432H)	9	44%	GP
	Turner Memorial Hospital, Keith (N433H)	9	44%	GP
	Leanchoil Hospital, Forres (N434H)	4	100%	GP
	Total	**35**	**51%**	
WIG	Drumchapel Hospital, Glasgow (G503H)	39	97%	COE
	Total	**39**	**97%**	
Crosshouse	*Units with three or less patients*	6	67%	
	Ayrshire Central Hospital, Irvine (A103H)	21	100%	COE
	Kirklandside Hospital, Kilmarnock (A105H)	17	100%	GP
	Total	**44**	**95%**	
Raigmore	*Units with three or less patients*	20	15%	
	Caithness General Hospital, Wick (H103H)	13	100%	COE
	Lawson Memorial Hospital, Golspie (H106H)	6	83%	COE
	RNI Community Hospital, Inverness (H201H)	19	100%	GP
	Raigmore Hospital, Inverness (H202H)	11	100%	COE
	Town & County Hospital, Nairn (H208H)	9	100%	GP
	Belford Hospital, Fort William (H212H)	4	100%	COE
	Portree Hospital, Skye (H215H)	6	0%	
	Ross Memorial Hospital, Dingwall (H217H)	4	0%	
	County Community Hospital, Invergordon (H219H)	5	100%	GP
	Ross House, Inverness (H222H)	5	0%	
	Total	**102**	**68%**	
RAH	*Units with three or less patients*	4	25%	
	Lorn & Islands District General Hospital, Oban (C121H)	4	0%	
	Vale of Leven District General Hospital (C206H)	36	97%	COE
	Royal Alexandra Hospital, Paisley (C418H)	24	100%	COE
	Total	**68**	**88%**	
Inverclyde	*Units with three or less patients*	4	100%	
	Dunoon & District General Hospital (C106H)	5	100%	GP
	Inverclyde Royal Hospital, Greenock (C313H)	25	100%	COE
	Total	**34**	**100%**	
Monklands	*Units with three or less patients*	6	0%	
	Coathill Hospital, Coatbridge (L103H)	4	100%	COE
	Monklands Hospital, Airdrie (L106H)	46	100%	COE
	Total	**56**	**89%**	
Perth	*Units with three or less patients*	6	100%	
	Perth Royal Infirmary (T202H)	10	100%	COE
	St. Margaret's Hospital, Auchterarder (T205H)	4	100%	GP
	Blairgowrie Community Hospital (T209H)	4	100%	GP
	Total	**24**	**100%**	
Victoria	*Units with three or less patients*	4	75%	
	Mansionhouse Unit, Glasgow (G307H)	72	94%	COE
	Total	**76**	**93%**	
Ayr	*Units with three or less patients*	3	100%	
	Biggart Hospital, Prestwick (A208H)	26	100%	COE
	East Ayrshire Community Hospital, Cumnock (A215H)	7	100%	GP
	Total	**36**	**100%**	
SGH	*Units with three or less patients*	2	100%	
	Mansionhouse Unit, Glasgow (G307H)	23	100%	COE
	Total	**25**	**100%**	

Appendix 2: Local Audit Co-ordinators

Participating Hospitals	Local Audit Co-ordinator
Aberdeen Royal Infirmary	Eva Christie
Ayr Hospital	Gillian Ward
Borders General Hospital	Amanda Streets
Crosshouse Hospital	Gillian Ward
Dr Gray's Hospital, Elgin	Jean Moore
Dumfries and Galloway Royal Infirmary	Alison Strawbridge
Forth Valley Acute Hospitals	Jean Brewster / Caroline Fraser
Hairmyres Hospital, East Kilbride	Sheena Frew
Glasgow Royal Infirmary	Karin Grant / Diane Whiteside
Inverclyde Royal Hospital, Greenock	Mairi Galbraith
Monklands Hospital	Liz Rundell
Ninewells Hospital, Dundee	Karen Scrimgeour
Perth Royal Infirmary	Lorna O'Donnell
Queen Margaret Hospital, Dunfermline	Jane Ferguson
Raigmore Hospital, Inverness	Floma Mackinnon
Royal Alexandra Hospital, Paisley	Jacqueline McStay
Royal Infirmary of Edinburgh	Jenny Farquhar / Fiona Neary
Southern General Hospital, Glasgow	Eileen Rennie
Victoria Infirmary, Glasgow	Karin Grant / Diane Whiteside
Western Infirmary, Glasgow	Eileen Rennie
Wishaw General Hospital	Fiona Baker

Appendix 3: Membership of the Scottish Hip Fracture Audit Steering Group 2008

Chairman	
Dr Damien Reid *	Medicine of the Elderly; Hairmyres Hospital, East Kilbride
Vice-Chairman	
Mr Alberto Gregori	Orthopaedic Surgery; Hairmyres Hospital, East Kilbride
Orthopaedic Surgery	
Mr Clark Dreghorn	Victoria Infirmary, Glasgow
Mr David Finlayson	Raigmore Hospital, Inverness
Medicine of the Elderly/Rehabilitation	
Dr Iain Lennox *	Victoria Infirmary, Glasgow
Dr Liz Burleigh *	Southern General Hospital, Glasgow
Anaesthesia	
Dr Heather Hosie	Southern General Hospital and SASM
Public Health	
Dr Rod Muir	Information Services Division (ISD) (since retired)
Project Management Team	
Ms Diana Beard	Project Manager
Mrs Kathleen Duncan *	Clinical Co-ordinator
Mr Rik Smith *	Statistician
Ms Sadia Majid	Data Co-ordinator
Information Services Division (ISD)	
Mr Graham Mitchell	Head of Clinical Governance Programme (since retired)
Allied Health Professionals	
Ms Norma Goodfellow *	Physiotherapy
Ms Susan Dewar *	Occupational therapy

** SHFA rehabilitation subgroup members*

Appendix 4: References

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