



Royal College
of Physicians

Falls and Fragility Fracture
Audit Programme (FFFAP)

National Hip Fracture Database (NHFD)

Annual report September 2018
(Data from January to December 2017)



In association with:



Commissioned by:

National Hip Fracture Database annual report 2018

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Falls and Fragility Fracture Audit Programme

The NHFD is commissioned by the Healthcare Quality Improvement Partnership (HQIP) and managed by the Care Quality Improvement Department (CQID) of the Royal College of Physicians (RCP) as part of the Falls and Fragility Fracture Audit Programme (FFFAP) alongside the Fracture Liaison Service Database (FLS-DB) and Falls Prevention Audit. FFFAP aims to improve the delivery of care for patients having falls or sustaining fractures through effective measurement against standards and feedback to providers.

Healthcare Quality Improvement Partnership

The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement in patient outcomes, and in particular, to increase the impact that clinical audit, outcome review programmes and registries have on healthcare quality in England and Wales. HQIP holds the contract to commission, manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP), comprising around 40 projects covering care provided to people with a wide range of medical, surgical and mental health conditions. The programme is funded by NHS England, the Welsh Government and, with some individual projects, other devolved administrations and crown dependencies. www.hqip.org.uk/national-programmes

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Foreword

The publication of this year's National Hip Fracture Database (NHFD) report is an exemplar of what the NHS is capable of achieving, that very few health systems across the world can match. A socialistic, altruistic care paradigm that seeks to look after every one of the country's citizens regardless of ability to pay is best advertised in the figures contained in this report.

An older, often vulnerable cohort of patients retrieved from the site of injury and treated in trauma units across England, Wales and Northern Ireland is carefully documented and their progress plotted and wellbeing analysed over a 120-day period from admission.

The data and analysis presented here are stark and objective, and analysis by each individual unit providing this care should be mandatory and included in multidisciplinary audit meetings. The reflection should include satisfaction with a trend to lowering of mortality in successive years – though this year's figure of 6.9% is marginally higher than the 6.7% in 2016, attributed to a more comprehensive dataset and fewer exclusions. It should also include introspection on improvement of the 4AT assessment so we can continue to celebrate the increasing possibility of rehabilitating these injured people to their own homes, rather than to residential or care facilities.

Sober analysis of the reasons for variation in units and an honest appraisal of shortcomings in resources, personnel and attitudes will allow each of us to look forward to next year's NHFD publication with anticipation.

I commend and congratulate the team who have produced this analysis and the larger NHS workforce whose efforts are so painstakingly dissected and laid bare here.

Ananda Nanu, president of the British Orthopaedic Association

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Introduction

Hip fracture is the most common serious injury in older people. It is also the most common reason for older people to need emergency anaesthesia and surgery, and the commonest cause of death following an accident.

Patients may remain in hospital for a number of weeks, leading to one and a half million hospital bed days being used each year. Overall [length of stay](#) has fallen slightly (from 20.6 to 20.0 days; see table below) since 2016. But, at any one time, patients recovering from hip fracture still occupy over 3,600 hospital beds (3,159 in England, 325 in Wales and 133 in Northern Ireland), a figure equivalent to 1 in 45 beds in England and Northern Ireland, and 1 in 33 beds in Wales.

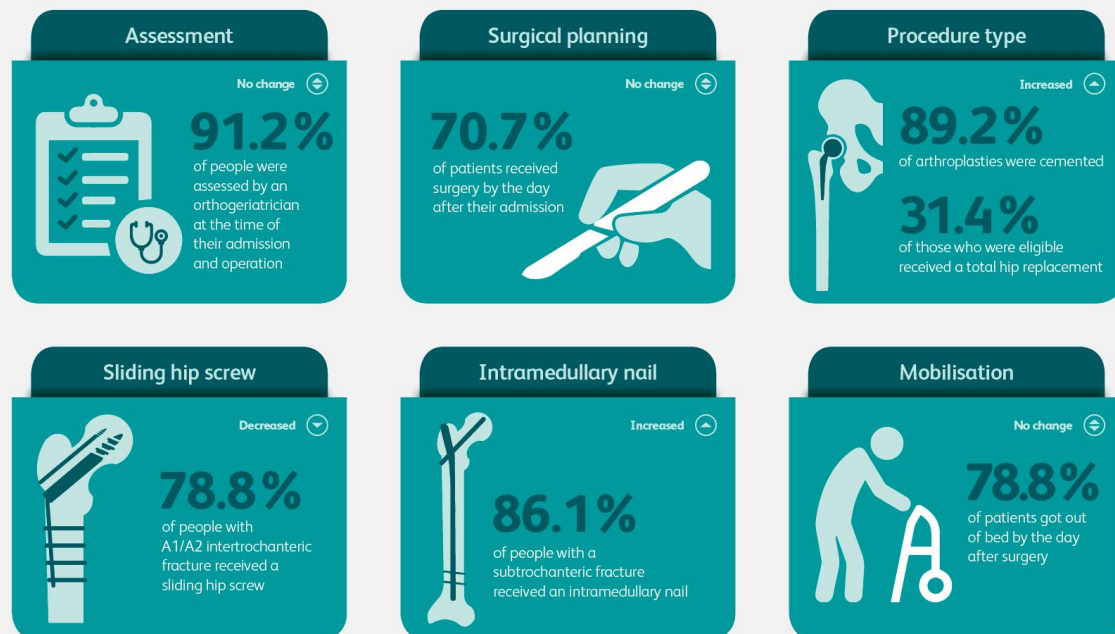
Admissions in 2017		Acute stay		Trust stay	
		Mean LOS (days)	Beds occupied	Mean LOS (days)	Beds occupied
England	60,060	15.5	2,550	19.2	3,159
Wales	3,826	18.9	198	31.0	325
N Ireland	2,072	13.5	77	23.4	133
NHFD	65,958	15.6	2,819	20.0	3,614

Only a minority of patients will completely regain their previous abilities, and increased dependency and difficulty walking mean that a quarter will need long-term care. As a result, hip fracture is associated with a total cost to health and social services of over £1 billion per year ([Leal et al 2016](#)). This one injury carries a total cost equivalent of approximately 1% of the whole NHS budget.

The care provided to people with hip fracture provides an unparalleled example of how frail and older people are managed by the modern NHS.

Hip fracture care in 2017

Delivery of NICE quality standards (QS16) compared with performance in 2016



Information on the different types of procedure can be found in our [My hip fracture care booklet](#), available on our website.

Methodology and case ascertainment

The National Hip Fracture Database (NHFD) was established in 2007 and its methodology has not changed since the detailed description provided in our [2017 report](#).

All 175 eligible hospitals in England, Wales and Northern Ireland now regularly upload data. This report describes the process and outcome of care provided to 66,668 people presenting with a hip fracture in 2017 – nearly all of the patients in these countries.

NHFD case ascertainment is more reliable than Hospital Episode Statistics (HES) as a result of hip fracture teams' attention to collection of data about their patients, along with the financial incentive of best practice tariff (BPT) in England. Since 2016 we have viewed NHFD records as the gold standard against which the accuracy of local patient administration systems should be measured.

NHFD has pioneered the release of clinical audit data to the general public (see thumbnail), making its analyses openly available so that clinical teams, hospital management and the public can share the same access to live information about services in their area.

NHFD Dashboard report for All NHFD 2016

Title	2015	2016	Rating	Progress
Admitted to orthopaedic ward within 4 hours	47.4	39.9	3	–
Mental test score recorded on admission	95.0	95.6	2	–
Preoperative medical assessment	98.0	98.7	2	–
Physiotherapy assessment by the day after surgery	No data	90.2	2	–
Mobilised out of bed by the day after surgery	78.0	77.3	3	–
Nutritional risk assessment	No data	84.6	2	–
Calcium assessment	No data	84.7	2	–
Received falls assessment*	96.5	96.1	–	–
Received bone health assessment*	97.0	96.7	–	–
Met best practice criteria	61.7	59.2	2	–
Surgery on day of, or day after, admission	73.2	70.6	2	–
Surgery supervised by consultant surgeon and anaesthetist	No data	86.6	3	–
General anaesthetic	51.4	51.0	–	–
General anaesthetic and nerve block (of all GA)	58.6	64.2	2	–
Spinal anaesthetic	42.7	43.3	–	–
Spinal anaesthetic and nerve block (of all SA)	33.0	40.2	3	+
Proportion of arthroplasties which are cemented	85.1	86.1	2	–
Eligible displaced intramedullary fractures treated with THN	27.0	30.4	3	+
Intertrochanteric fractures (sect. reverse oblique) treated with DHS	80.0	80.8	2	–
Subtrochanteric fractures treated with an IM nail	79.9	84.2	2	–
Case ascertainment	91.2	95.0	–	–
Acute length of stay (days)	16.0	16.6	2	–
Overall hospital length of stay (days)	20.5	21.6	2	–
Documented final discharge destination	83.9	86.9	2	–
Discharge to original residence within 120 days	63.8	67.5	2	–
Hip fractures which were sustained as an inpatient	3.9	4.1	2	–
Documented not to have had a reoperation within 120 days	95.3	95.7	2	–
120 day follow up	80.1	36.7	–	–
Crude 30 day mortality rate	7.1	6.7	–	–
Adjusted 30 day mortality rate	7.1	6.7	–	–

Rating: 4=Top quartile, 3=Upper middle quartile, 2=Lower middle quartile, and 1=Lower quartile (worst performance)
Progress: + = Performance improving, – = Performance broadly unchanged, and – = Performance declining



FFAP

The National Hip Fracture Database
Part of the Falls and Fragility Fracture Audit Programme

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News/Events

- Mortality and CCG data updated**
All patients to 30 September 2018
- Next BPT cut off 14 January**
BPT Timetable for 2018/2019
- Reminder - check re-ops at 120 days**
- BBC Radio 4 Quality of Life after hip fracture**
Recent 'inside health' features work of Oxford WHITE team
- FFAP newsletter September 2018**
Covers NHFD, FLS-DB and Falls (NAIF)
- NICE impact report**
NICE has published a new impact report on falls and fragility fractures
- Upcoming events**
- Benchmarks updated**
Latest data plus new delirium metric
- Are you using EQSD?**
Enabling 'quality of life' scores
- Check your drafts!**
Always complete your records
- News archives**



NHFD 2018 annual report

The latest annual report shows that half of all patients were identified as having some delirium after surgery. A quarter of patients screened were identified under the highest score of 4+. Patients with this score are twice as likely to die as inpatients. The NHFD have championed the routine assessment of people to identify, prevent and treat such problems, and over 80% of all patients received such assessment in 2017.

Download report



Patients' experience of hip fracture care in 2017 - Latest NHFD infographic



Online hospital dashboards plus progress and ratings



Online assessment, surgery and outcome benchmarks



Online charts for best practice, surgery and performance



12 Questions - A guide for patients, their families and carers

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The National Hip Fracture Database © Copyright 2016 - 2018 HQIP/RCP Falls & Fragility Fracture Audit Programme (FFAP)



Nearly all of the information included in this report will already have been made available to local teams through the NHFD [website](#) (see above) developed with Crown Informatics.

Quality improvement

The NHFD provides feedback in a number of formats, including annual reports, patient reports, regional workshops and, more recently, live publically available run charts.

Three-quarters of hospitals reported using NHFD charts and tables as the basis for quality improvement (QI) projects during 2017. An example case study is summarised below:

Salford Royal Hospital – successful reduction of pressure ulcers

The challenge

In 2013 the NHFD highlighted a high incidence of pressure ulcers in hip fracture patients.

The solution

A hospital project team responded to this early finding and introduced a prompt regular Waterlow assessment, a directorate-wide training programme and a management protocol to make better use of the skills of a tissue viability nurse.

The outcome

Salford Royal Hospital recorded a dramatic and sustained fall in pressure ulcer incidence, as shown in their patient safety run chart. This project was one of three shortlisted from 148 entries for an HQIP 'local improvement following national audit participation award'. Salford Royal Hospital has continued to display some of the lowest rates of pressure ulcer incidence in the UK.



In March 2018 the NHFD ran a quality improvement training day in Leicester working with groups of trainees from the three key specialties – orthopaedics, anaesthetics and geriatrics.

The trainees who took part reported lack of participation in and completion of an audit cycle, as well as subsequent or related QI projects. This has steered the FFFAP team to develop an educational programme for trainees, which is planned to start in August 2018. This will use FFFAP data as a basis for QI projects, include teaching days and peer support from a FFFAP QI fellow.

We are also developing a new 'resources' section for the NHFD website and we welcome future accounts of successful projects in which hip fracture teams have used NHFD data as the basis for QI work. We are equally keen to include learning from those projects that are not successful. We look forward to sharing the details with our participating teams later in the year.

Key performance indicators and recommendations

This report describes the development of a set of six NHFD key performance indicators – designed to complement the very broad range of data on many aspects of assessment, surgical and anaesthetic care, rehabilitation, follow up and outcome presented in [benchmarking tables](#) and [dashboards](#) (see thumbnails) on the NHFD website.

KPI	Area of care
Key performance indicator 1	Prompt orthogeriatric assessment
Key performance indicator 2	Prompt surgery
Key performance indicator 3	NICE compliant surgical approach
Key performance indicator 4	Prompt mobilisation after surgery
Key performance indicator 5	Not delirious when tested after operation
Key performance indicator 6	Returned to original residence by 120 days

Key performance indicator 1

Prompt orthogeriatric assessment

Orthogeriatric assessment is central to the recommendations of both the NICE clinical guideline on the management of hip fracture care in adults (CG124) and quality standard QS16.

A target of ‘assessment by a senior orthogeriatrician within 72 hours’ means that all patients can and should be seen within this timeframe, even if they present at the weekend to a unit with a Monday to Friday orthogeriatric service. Nine hospitals achieved figures of over 99% in 2017.

In 2017, 91.2% of all NHFD patients received senior orthogeriatric assessment within 72 hours, a further slight improvement from 90.8% in 2016 (see chart under ‘prompt surgery’ below).

In England, investment in orthogeriatrics was incentivised by best practice tariff (BPT) and 93.2% of patients were assessed in 2017. The corresponding figure was 83.3% in Northern Ireland.

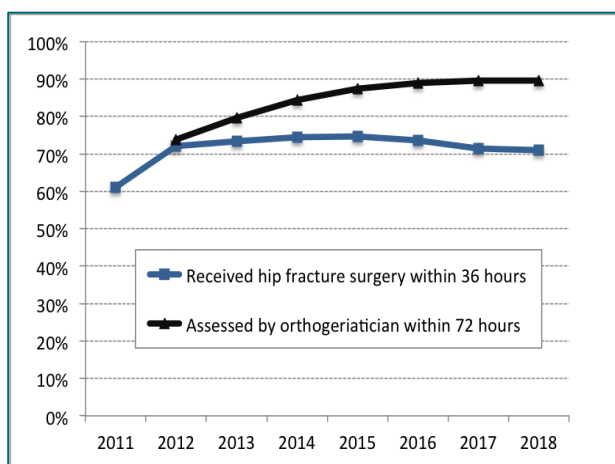
Work using NHFD data ([Neuburger 2017](#), [2018](#)) has confirmed the emphasis that NICE places on orthogeriatric assessment – directly linking improvements in the quality and outcome of care to investment in orthogeriatrician support. It is therefore a concern that a figure of just 63.3% was reported in Wales, and the consequences of this are described in this report.

Recommendation 1 Hospitals should examine their own NHFD data in dashboards and run charts and those with poor rates of orthogeriatric assessment should consider the implications of this for the quality of initial assessment, preoperative optimisation, perioperative medical care, rehabilitation, discharge planning, and survival that are described in this report.

Key performance indicator 2

Prompt surgery

Both NICE CG124 and QS16 recommend surgery by the day following admission, and in 2017 five hospitals reported that this was achieved for over 90% of all cases.



In England, surgery within 36 hours is incentivised by best practice tariff, anticipating that around 85% of people should be suitable for surgery within 36 hours, as some will have acute medical problems that may need to be optimised before they are considered fit for anaesthesia and surgery.

Across all countries 70.2% of people underwent surgery within 36 hours of presentation – a further deterioration compared with national figures of 74.4% in

2015 and 73.0% in 2016, which means that on average people are now waiting 33 hours for hip fracture surgery.

In England, the proportion of people receiving surgery within 36 hours fell from 74.8% in 2016 to 72.7%, with corresponding falls from 67.5% to 61.2% in Wales, and from 33.0% to 12.3% in Northern Ireland.

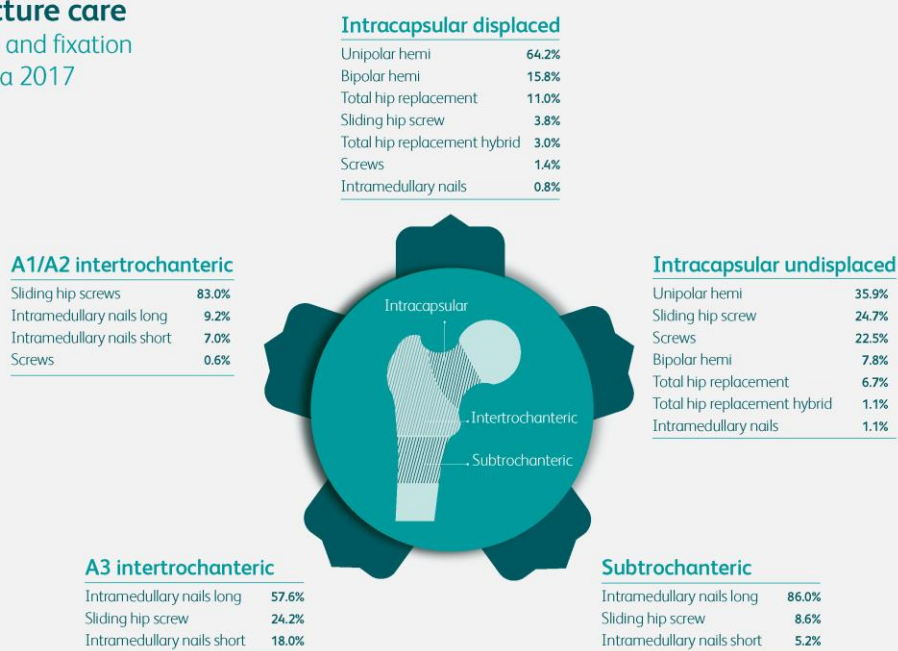
Delay in surgery for clinical reasons has remained stable, but we have seen an increase in delays due to lack of space on theatre lists and list over-runs. The increase in delays for such reasons increased from 13.2% in 2016 to 14.4% in 2017 and may be indicative of rising pressure on theatre capacity. However, clinical teams continue to report inefficiencies in the use of theatre capacity. Accounts of theatre lists routinely starting late and the avoidable cancellation of individual cases suggest that local QI has considerable potential to reverse this deterioration in prompt surgery.

In our [2018 Facilities Audit](#) across all countries most units (106/175, 61%) reported that they do not have dedicated hip fracture theatre lists. Among units with such lists, the number of available sessions varied from one a week to fourteen each week – an average of three dedicated lists a week.

Recommendation 2 Hospitals should examine their own NHFD data in dashboards and run charts and those with poor performance should establish what proportion of delays in surgical operations are the result of avoidable inefficiencies in preoperative planning or in the organisation of theatre lists.

Hip fracture care

Operation and fixation
NHFD data 2017



Information on the different types of procedure can be found in our [My hip fracture care booklet](#), available on our website.

Key performance indicator 3

NICE compliant surgical approach

The surgical techniques appropriate to different types of hip fracture have been extensively examined by NICE in CG124 and QS16, and are discussed in [Section 2](#) at the end of this report. NHFD run charts, tables and dashboards report this in detail.

31.4% of patients who NICE views as eligible for total hip replacement (THR) for displaced intracapsular fracture received this operation. This is an improvement from 30.4% in 2016, but there is still huge variation between units, with rates that varied from 0–100%.

78.8% of people with an A1/A2 intertrochanteric fracture received the sliding hip screw (SHS) – a fall from 80.9% in 2016, which reflects an increase in the use of intramedullary (IM) nails, contrary to the approach recommended by NICE.

Failure to follow NICE guidance for these and other aspects of operative approach meant that in preparing our last annual report we found that in 2016 only 64.2% of all patients appeared to have received an operation that NICE would have recommended – with figures ranging from as low as 15.7% up to 86.0% in different units.

We are not reporting on KPI3 this year, since the quality of data underpinning these figures was poor. It is clear that in the past some units have been leaving the coding of operative and anaesthetic technique to non-clinical staff. Since January 2018 we have therefore introduced a theatre data capture sheet which has improved the ease and accuracy with which fracture type and operative/anaesthetic approach are recorded.

Improvement in the quality of this data means that next year we will report a new key performance indicator – ‘% of all patients who receive an operation compliant with NICE recommendations’.

Recommendation 3 Those providing or commissioning hip fracture services must examine their run charts and dashboards, and challenge units which report low rates of THR in eligible cases, or low rates of SHS for A1/A2 fractures – such findings would suggest that these groups of patients are not being treated in a cost-effective way that is in line with NICE guidance.

Key performance indicator 4

Prompt mobilisation after surgery

NHFD measures whether patients are able to be mobilised by the day following hip fracture surgery, in response to the NICE recommendation that ‘*Adults with hip fracture start rehabilitation at least once a day, no later than the day after surgery*’ ([NICE QS16](#)).

Some patients will have been bed-bound before surgery so not everyone will be suitable for mobilisation, but four hospitals reported figures of over 99% in 2017.

All units should ensure that they are reporting data consistent with the NHFD standard that ‘*the patient is mobilised (standing or hoisted) out of bed by the day following surgery*’. 78% were successfully mobilised in 2015 and 2016, and this figure rose only slightly to reach 78.8% in 2017.

It is a concern that while this figure was 79.4% in England and 89.4% in Northern Ireland, only 62.2% of patients in Wales were able to be mobilised by the day after surgery.

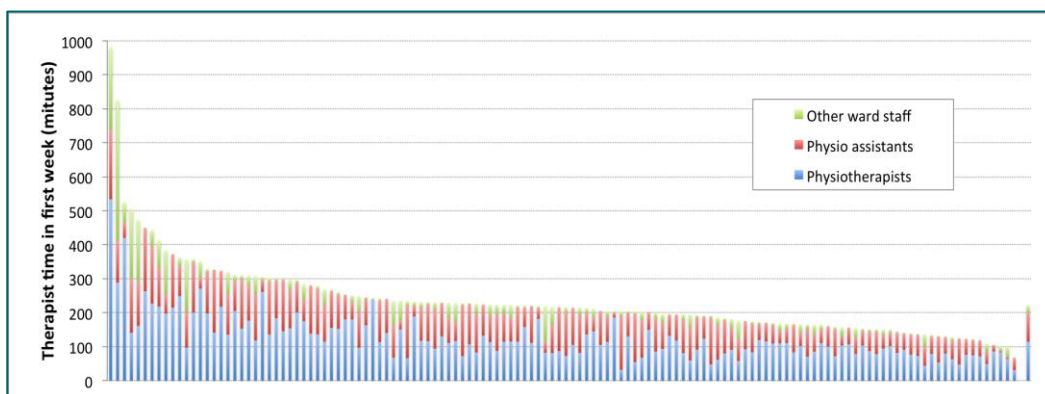
Hospitals with poor mobilisation rates need to use the ‘Hip Sprint’ report *Recovering after a hip fracture* to review the quality and intensity of physiotherapy they are providing. Units that provide high-quality perioperative surgical, anaesthetic and medical care will minimise the number of patients who are too unwell to receive therapy.

We found that 9.4% of patients were unable to get up on the day after surgery as a result of pain or low blood pressure – factors that might have been anticipated by clear perioperative protocols and closer working between surgical and anaesthetic colleagues.

In 2017 the NHFD collaborated with the Chartered Society of Physiotherapy (CSP) in the Physiotherapy ‘Hip Sprint’ Audit.

This was configured around NICE clinical guideline CG124 recommendations 1.8.1, 1.7.1. and 1.7.2 – which state that patients should be offered physiotherapy assessment that ensures ‘*early identification of individual goals for multidisciplinary rehabilitation to recover mobility and independence, and to facilitate return to pre-fracture residence and long-term wellbeing*’, ‘*mobilisation on the day after surgery*’, ‘*mobilisation at least once a day*’ and ‘*regular physiotherapy review*’.

Patients averaged 2 hours of therapy in the first week, but this figure varied enormously around the country (see chart below). However, the amount of therapy a patient receives is not just a matter of the availability of physiotherapists. In some units, Hip Sprint successfully captured the huge contribution of other therapists and nurses to postoperative rehabilitation, but in other hospitals this was either not recognised or not being fully exploited by multidisciplinary team working.



Recommendation 4 Physiotherapy leads must be included in hip fracture programme governance meetings and if the key performance indicator ‘Prompt mobilisation after surgery’ identifies a concern this must lead to development of plans to improve multidisciplinary working and avoid people being unable to get up promptly as a result of pain, low blood pressure or delirium.

Key performance indicator 5

Not delirious when tested after operation

Delirium is the commonest complication of all forms of surgery and anaesthesia in older people, but the condition is still poorly recognised by some staff looking after these patients.

NHFD have therefore adopted the 4A test (4AT) ([Bellelli 2014](#)) as a simple measure that will encourage routine assessment, and improve our understanding of a complication that can dominate patients’ hospital stay and recovery, as discussed in [Section 1](#) at the end of this report.

NHFD asks for 4AT to be performed in the week following surgery, and over 80% of people were screened for postoperative delirium using the 4AT score in 2017.

In some units a large number of patients were not assessed so it is inappropriate for us to report rates of delirium for different units. Instead we will report on the ‘*proportion of patients who did not*

have delirium when tested after operation' – so that a failure to test will be reflected in this indicator.

In 2017 we found that 62.3% of patients were successfully tested and found not to have delirium. This figure ranged from 0% to over 90%, and units at either extreme of this distribution should review the way in which this crucial patient assessment is being performed.

Among those patients who were tested, a quarter (24.9%) were identified as having 'possible delirium' with a score of 4+. These people were twice as likely to die as inpatients, three times more likely to need placement in a residential home and four times more likely to need placement in a nursing home.

Recommendation 5 Clinical teams must review the new key performance indicator '*proportion of patients not delirious when tested after operation*' for their unit. If dashboards and benchmarking tables highlight poor performance then multidisciplinary clinical governance meetings must consider, discuss and develop plans to improve the perioperative care they are providing to their patients.

Key performance indicator 6

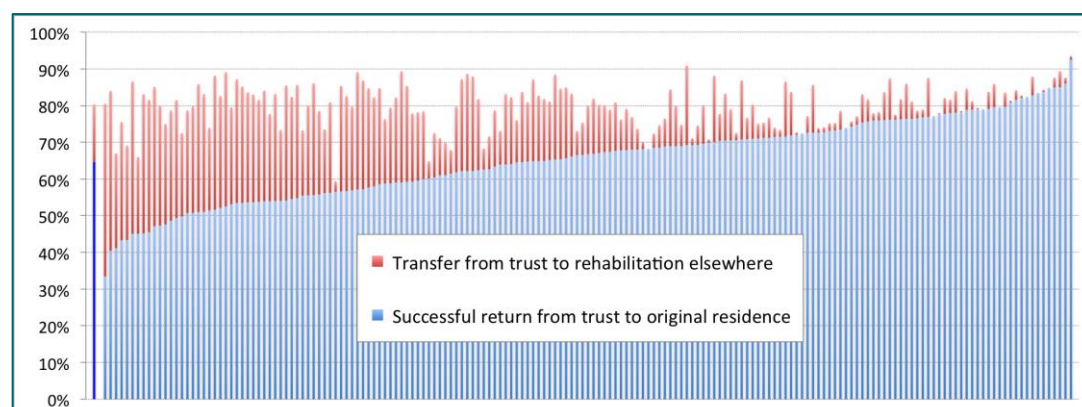
Returned to original residence by 120 days

NICE recommend that hip fracture teams '*should have clinical and service governance responsibility for all stages of the pathway of care and rehabilitation – including those delivered in the community*' ([CG124, NICE 2011](#)). In spite of this, many hip fracture services are unable to report whether their patients return home.

In 2017 we found that 67.5% of patients were known to have returned to their original residence by 120 days after hip fracture – a figure that is unchanged since 2016.

On average, 64.3% of people will return to their previous residence from the acute trust, but this figure varies between 33.4% and 92.5% in different units (see chart below).

Much of this variation is explained by huge differences in how many patients are transferred to other trusts and units for rehabilitation, and some hip fracture teams appear to have no way of knowing whether this rehabilitation was successful.



120-day follow-up is particularly important for hip fracture services, which routinely transfer a large proportion of patients to continue their rehabilitation in other trusts or settings. Without this they will return poor figures for this performance indicator.

Only 38.4% of patients received 120-day follow-up of their mobility and to confirm that they were still taking bone protection medication. This is only a slight improvement from 37.4% in 2016, and means that most units do not know if their patients are continuing with effective bone protection.

Without follow up, units cannot know the effectiveness of the care they provide or understand the implications of this for their patients' quality of life. Our [Hip Sprint physiotherapy audit](#) found that 37% of people had been walking freely without aid before hip fracture, but that by 120 days only 10% were walking this well and 9% had become completely immobile.

Recommendation 6 Acute hip fracture teams must examine their approach to 120-day follow-up, such as 30-day mortality and persistence with bone protection, as these reflect elements of care which have influence on aspects of outcome, even after the patient leaves the acute trust.

Mortality

Trends in mortality

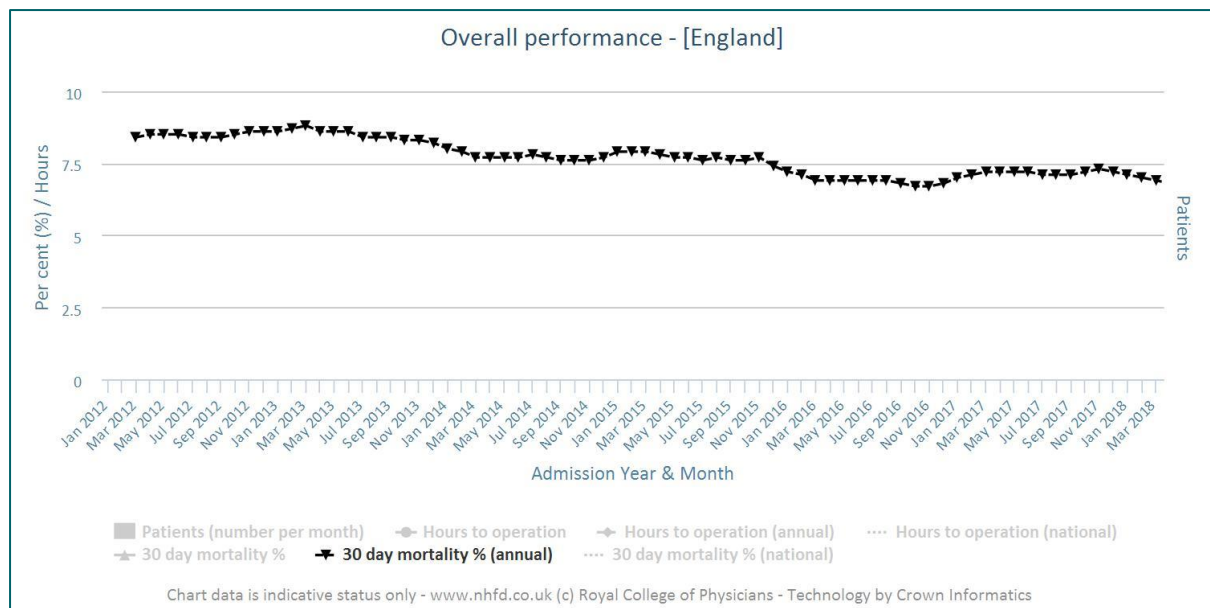
NHFD has consistently reported a trend for improvement in 30-day mortality over recent years.

Mortality rose very slightly last year (to 6.9%, *cf.* 6.7% in 2016), but this appears to reflect a reduction in missing data and the need to exclude fewer cases, so that our mortality outlier analysis was able to use a more complete dataset (66,500 cases, *cf.* 65,645 last year).

NHFD uses independent 30-day mortality figures from the Office of National Statistics (ONS). This annual report is based on a dataset that is closed in early 2018, even though ONS may not have been notified of all relevant deaths at that time.

As a result, the mortality figures in this report will not be as complete as the up-to-date figures shown in our website run charts. These run charts demonstrate the progressive improvement described in successive NHFD reports. They also allow us to monitor trends in different countries.

It is clear that this overall improvement results from a steady reduction in mortality among patients in [England](#) – where the run chart (see chart below) shows a fall from 8.4% at the start of 2012, to just 7.1% in 2017.



In contrast, the run chart for [Wales](#) shows no evidence for such improvement – 30-day mortality in Wales was 7.9% at the start of 2012, and remained almost unchanged at 7.8% at the end of 2017.

Data for Northern Ireland have always suggested substantially lower 30-day mortality, with the Royal Victoria Hospital, Belfast featuring as a low mortality outlier once again this year. The NHFD outlier analysis for 2012–13 reported an overall 30-day mortality figure of 6.3% for Northern Ireland, a figure which has fallen to just 4.9% in the equivalent analysis for 2017.

Casemix-adjusted 30-day mortality

We performed a casemix-adjusted analysis of 30-day mortality (see funnel plot below) using externally validated data from the ONS, and Business Services Organisation (BSO) in Northern Ireland, following the same methodology as described last year ([Tsang et al 2017](#); see thumbnail).

There was substantially less missing data this year, but poor data quality led to a number of units appearing as outliers since their casemix data suggested an unusually healthy population.

Some units reported improbable numbers of people admitted from care homes or provided data on pre-fracture mobility that was inconsistent with a patient's residence. Such inaccuracy implies poor attention to early planning of rehabilitation and discharge goals.

In other units the distribution of patients' American Society of Anaesthesiologist (ASA) grades seemed inconsistent, suggesting that these data may not have been provided by anaesthetists. This is a concern since ASA grade is a useful predictor of outcome ([Johansen et al, Anaesthesia 2017](#)). Half (49%) of units reported ASA as the only mortality risk assessment they used, with 8% using the Nottingham Hip Fracture Score and 37% of units using both, and 6% not using anything. The new



[NHFD theatre data capture sheet](#) introduced in 2018 is designed to make it easier for anaesthetists to ensure the quality of these key casemix data.

Units' crude and adjusted mortality figures are detailed in the '[Outcome' benchmark tables](#). A marked difference between crude and adjusted mortality may suggest poor quality data for the six casemix variables, in which case clinical leads should log in and examine online reports of their data quality.

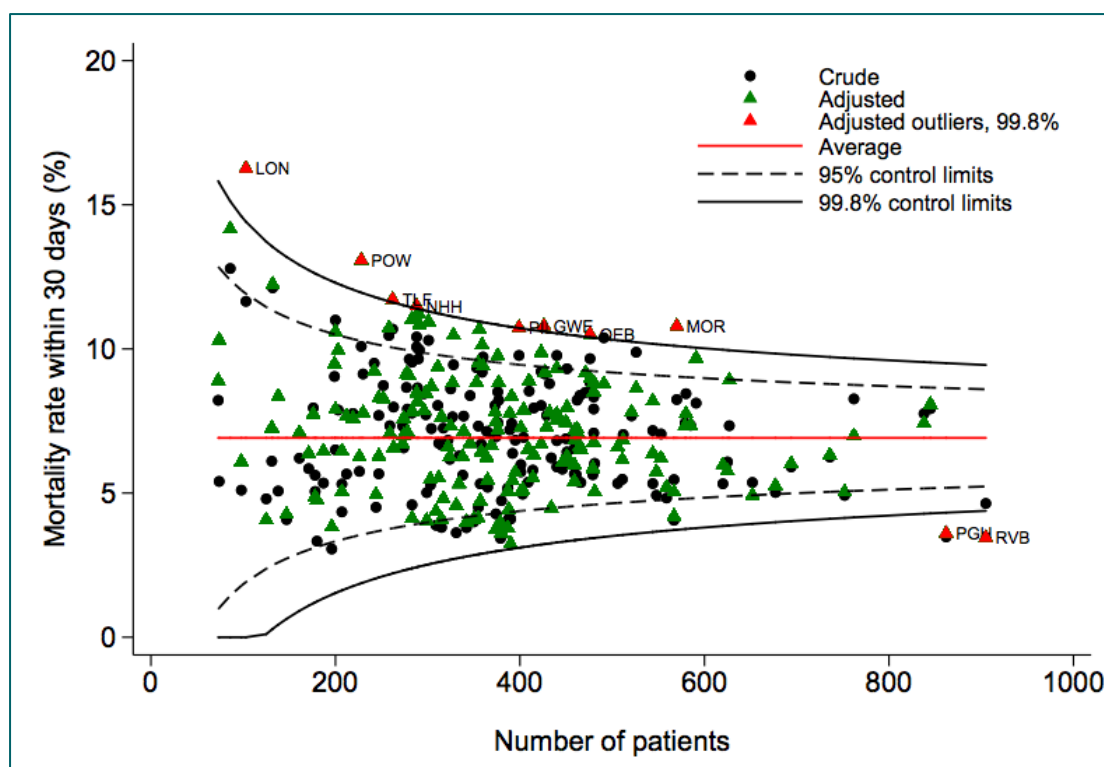
It is the responsibility of local clinical leads to check the quality of data before they are submitted, to avoid poor quality data creating a misleading picture that might adversely affect their team's morale, and the local population's confidence in their hip fracture service.

A total of 66,500 patients from all 175 trauma units in England, Wales and Northern Ireland were included in this year's mortality analysis. We recorded 4,598 people to have died within 30 days, giving an overall mortality of 6.9% – a slight increase from the 6.7% we reported in 2016.

The availability of run charts on the NHFD website means that the findings of this analysis should not come as a surprise to units that were identified as outliers from the funnel plot (see funnel plot below), since their crude mortality figures have been available to them throughout the last year.

All hospitals identified as showing mortality rates outside the 95% control limits were contacted prior to publication of this report and managed according to the outlier policy, which is available in the [resources section](#) of our website. We recommend a thorough internal review of the data alongside the crude mortality we report in individual hospital run charts.

If we have identified that increased mortality is suggestive of poor performance we recommend that sites consider requesting a multidisciplinary service review from the British Orthopaedic Association (BOA).



Hospitals with increased mortality

We identified eight hospitals as 'outliers' for 2017 – with casemix-adjusted 30-day mortality rates above the upper 99.8% (3 standard deviation) control limit.

Two of these units had also been outliers for 2016 data in last years' annual report:

- The Princess of Wales Hospital, Bridgend (POW) had reported an adjusted mortality of 12.6% in 2016. A crude mortality of 10.1%, and continued poor data quality will have contributed to the hospital's adjusted mortality, which rose to 13.1% in 2017.
- Royal Gwent Hospital, Newport (GWE) had recorded an adjusted mortality of 12.0% in 2016. A crude mortality of 9.2% combined with improvements in data quality means that the hospital's adjusted mortality was slightly lower at 10.8% in 2017.

Four other units had improved since 2016 and were no longer outliers, but six other units were outliers for the first time in 2017.

Two of these units provided good quality data that suggested high casemix-adjusted mortality.

- Royal London Hospital (LON) had a crude mortality of 11.7%, but when a younger, fitter and more mobile population is taken into account their casemix-adjusted figure rose to 16.3%.
- Pilgrim Hospital (PIL) had a crude mortality of 9.8%, but with relatively large numbers of patients recorded to have been admitted from their own home, so their casemix-adjusted figure was 10.7%.

Missing or poor quality ASA data appears to have contributed to the high casemix-adjusted figures of four other units which were outliers at the 99.8% (3SD) limit for mortality in 2017:

- Princess Royal Hospital, Telford (TLF) was identified as not operating on over 5% of patients in 2016 and again in 2017, and recorded a crude mortality of 10.7% and an adjusted figure of 11.7% in 2017.
- North Hampshire Hospital (NHH) had a crude mortality of 10.4%, which rose to 11.5% after casemix adjustment.
- Queen Elizabeth Hospital, Edgbaston (QEB) had a crude mortality of 9.7%, with an adjusted figure of 10.5%.
- Morriston Hospital, Swansea (MOR) had a crude mortality of 8.3%, but the poor quality of ASA data meant that their casemix-adjusted mortality was 10.8% in 2017.

A further fourteen hospitals had adjusted mortality above the upper 95% (2SD) control limit.

Observations at this significance level should be interpreted with caution. In any analysis of 175 units some will fall outside 2SD control limits by chance, as a result of expected statistical variation.

NHFD run charts show how the crude mortality rate in some of these hospitals fluctuated in and out of the 2SD control limit between 2016 and 2017, and some have casemix profiles that differ from the overall average or from their own profile last year.

- Lincoln County Hospital and Royal Glamorgan Hospital, Llantrisant both had an adjusted mortality rate above the upper 95% limit.
- Barnet General Hospital and Hull Royal Infirmary had relatively good crude mortality but high adjusted mortality figures, which primarily appear to reflect the poor quality of the data they submitted to the NHFD.
- Missing and poor quality data was also an issue for seven other hospitals (Barnsley District General Hospital; Luton and Dunstable Hospital; Princess Alexandra Hospital, Harlow; Sandwell District Hospital; Nevil Hall Hospital, Abergavenny; Furness General; Worcestershire Royal Hospital) which all had mortality rates above the upper 95% limit after casemix adjustment.
- Southport and Formby District General; Scunthorpe General Hospital; and Nobles Hospital, Isle of Man were all identified as not having operated on over 5% of patients in 2017. This approach, along with poor quality ASA data may have contributed to adjusted mortality above the upper 95% limit in these units.

Hospitals with low 30-day mortality

After casemix adjustment, we identified two hospitals as positive ‘outliers’ – with mortality below the lower 99.8% (3SD) limit – a finding consistent with these units’ excellent performance over a number of years.

- Data submitted by Poole General Hospital (PGH) suggests an unusually large number of people in the oldest age groups and people admitted from care homes, in spite of which the unit achieves a crude mortality of 3.5% and a casemix-adjusted figure of just 3.6%.
- Royal Victoria Hospital, Belfast (RVB) reported a crude mortality of 4.6% which fell to 3.5% after casemix adjustment, as the result of an unusually high number of people being recorded with very limited mobility or poor ASA grades.

In addition, seven hospitals (Altnagelvin Hospital; Royal Oldham Hospital; Queen Alexandra Hospital, Portsmouth; Royal Victoria Infirmary, Newcastle; Stepping Hill Hospital; University Hospital of North Staffordshire; Wythenshawe Hospital) had casemix-adjusted 30-day mortality in 2017 that was better than the majority of units – as indicated by rates falling below the lower 95% limit.

Another four units (Royal Bolton Hospital; Birmingham Heartlands Hospital; Medway Maritime Hospital; University Hospital of North Tees) achieved similar figures, though with poorer data for their patients’ prior mobility or fracture type.

Poole Hospital NHS Trust – high patient numbers – low mortality rates

Poole manages the largest number of patients in the country but consistently has among the lowest 30-day mortality rates.

A dynamic dedicated trauma team is vital, as is a proactive and responsive orthogeriatric service – with daily senior medical review of perioperative patients at the heart of the process.

Two consultant physicians and one part-time staff physician lead twice weekly senior orthogeriatric ward rounds and weekly multidisciplinary team (MDT) meetings with ward-based orthopaedic juniors, with other consultant geriatricians providing weekend support to ensure a 7-day service.

The orthogeriatric service extends to all older trauma patients, many of whom are also vulnerable and will benefit from the same comprehensive review provided to those with a broken hip. Most older trauma patients are seen within 24 hours of admission, and those with hip fracture are seen on the day of admission or early the following morning to minimise delay to theatre.

A template is used to guide coordinated daily senior medical reviews of perioperative patients in the early days when medical problems are most anticipated. The template is updated daily and available by 7.30am each weekday morning.

Patients who are 'septic' or require medical review are added, and those with high 'live' National Early Warning Score (NEWS) or an acute kidney injury (AKI) are identified from the hospital's electronic information systems. An orthogeriatric point of contact is available by pager during working hours.

Monthly morbidity and mortality meetings attended by surgeons, anaesthetists, orthogeriatricians and senior trauma nursing staff contribute to clinical governance, as do timely consultant orthogeriatrician dictated discharge summaries for older trauma patients.

Improving hip fracture care

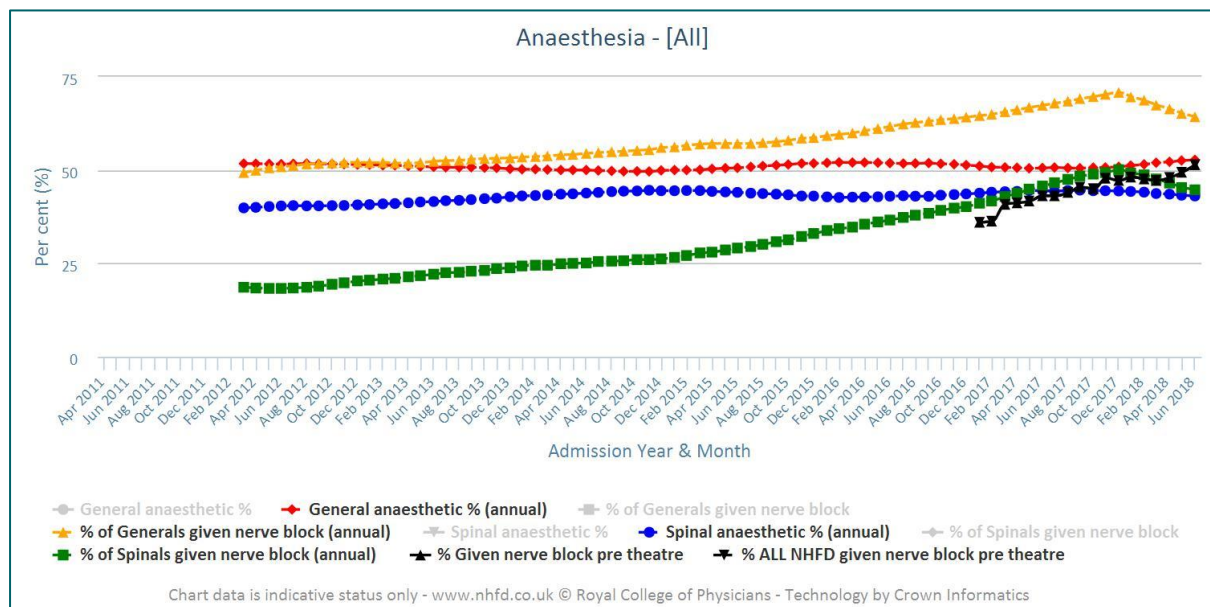
1. Improving the quality of perioperative care

Pain management

Hip fracture pain can be severe, particularly if the patient's leg is moved, and commonly features as one of patients' main recollections of suffering this injury. Most units (90%) describe routinely using a pain score in the emergency unit and before surgery, with 87% using these after surgery.

Pain assessment can be challenging with older patients and in those with confusion or cognitive impairment ([RCP, BGS and British Pain Society 2007](#)). A quarter of units (27%) report that they do not have a pain assessment tool designed for use in this situation. Among those hospitals which do use a tool designed for use in people with dementia, most (62%) reported using the Abbey pain scale ([Abbey et al 2004](#)).

NHFD has championed the provision of nerve blocks as a way of improving patients' pain after surgery, and our run chart has documented progressive improvement in the proportion of people being offered this following both general and regional anaesthesia. In 2017 we recorded marked further improvement, with figures of 70.8% (cf. 64.2% in 2016) following general anaesthesia and 50.1% (cf. 40.2% in 2016) following spinal anaesthesia (see chart below).



Since the start of 2017 we have also collected data on the use of nerve blocks before surgery – in the emergency unit and in the orthopaedic ward. It is very encouraging that provision of such nerve blocks increased from 36.0% to 47.3% just over the course of 2017, as this is a very effective means of reducing fracture pain, and avoiding excessive reliance on powerful painkillers such as opiates which carry significant side effects in this group of patients.

Delirium assessment

Delirium is the commonest complication of surgery and anaesthesia in older people.

NHFD have adopted the 4A test (4AT) as the basis for key performance indicator 5. This quick and simple examination of the four key components of delirium (see box) will encourage routine screening for delirium and improve our understanding of a complication that can dominate patients' hospital stay and recovery ([Bellelli et al 2014](#)).

In 2017 the 4AT was completed in the week after surgery in 90% of all patients.

In England, the use of 4AT is incentivised by best practice tariff and 95.3% of patients were

Alertness

Markedly drowsy/sleepy (persisting for >10 seconds after attempting to wake them with speech or gentle touch), or agitated/hyperactive

AMT

Age
Date of birth
Current year
Current place

Attention

"Tell me the months of the year in backwards order, starting at December", perhaps prompt "What is the month before December?"

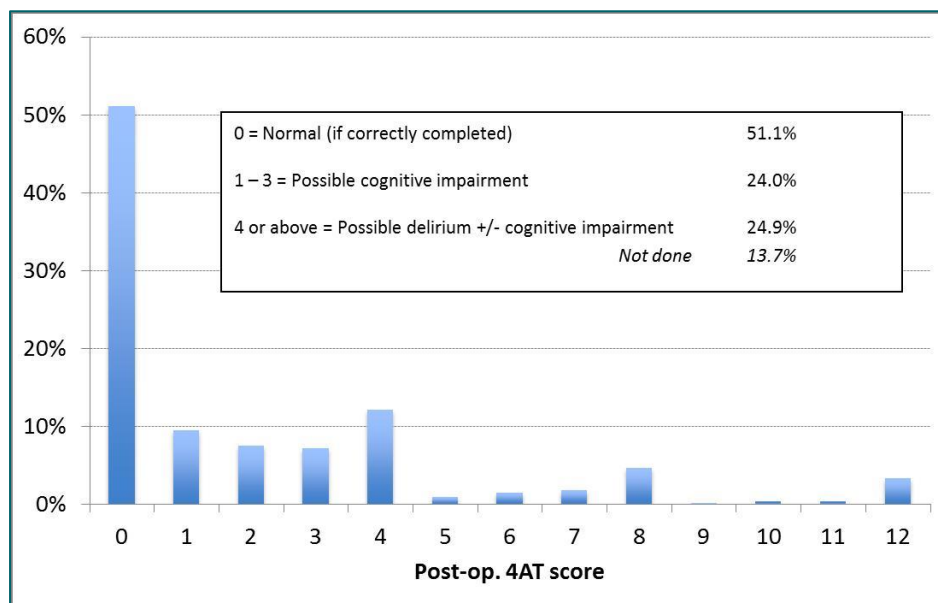
Acute change

Change or fluctuation in alertness, cognition, paranoia or hallucinations, arising over the last 2 weeks and still evident in the last 24 hours

tested – far better than the figure of 38.4% achieved in Wales and 42.0% in Northern Ireland.

Most units (56%) described that their target was to perform the 4AT within 72 hours of surgery, with 17% of units aiming to perform it on the first postoperative day.

Half (51.1%) of patients had a 4AT score of 0 which 4AT classes as ‘normal’ (see chart below). A quarter (24.0%) scored 1–3, and a quarter (24.9%) were identified as ‘possible delirium’ with a score of 4 or more.



People with pre-existing cognitive impairment (an abnormal Abbreviated Mental Test (AMT) score <8 on presentation) were several times more likely to develop delirium (55.8%, *cf.* 7.4% of people with a normal AMT). This emphasises the potential of the AMT as a means of identifying which patients are most likely to develop this complication so that measures can be taken to prevent [delirium](#).

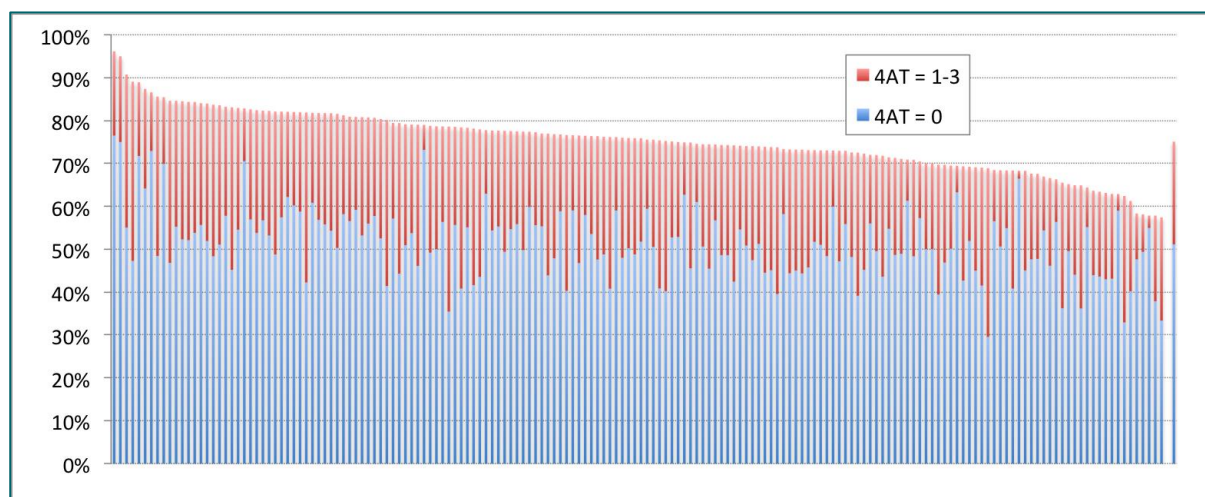
NHFD collects the different elements of the 4AT test separately, and 6.8% of people were identified as having abnormal ‘alertness’. This suggests that at least one in fifteen people might develop ‘hypoactive delirium’ – a subtype that carries a poor prognosis.

Only 10.9% of people showed ‘acute change’, sensitivity to which depends on ward teams actively seeking a collateral history from patients’ family, usual carers and from hospital night staff. As a result these NHFD figures are likely to still underestimate the overall incidence of delirium.

Measuring the quality of perioperative care

The 4AT suggested delirium in 27.2% of people who had received a general anaesthetic alone, compared with 22.2% of those who received a spinal anaesthetic alone – though this finding may reflect the significantly more challenging casemix of people who underwent general anaesthesia.

The clinical impact of postoperative delirium is demonstrated by its relationship with outcome. People admitted from their own home who developed delirium were twice as likely to die as inpatients, and nearly four times more likely to need placement in a nursing home.



Since we found considerable variation in the incidence of delirium between hospitals (see chart above), we are considering the development of a new NHFD metric – ‘% of patients not delirious when tested postoperatively’ – as an additional indicator of the quality and outcome of perioperative care.

2. Improving the quality of hip fracture surgery

Non-operative management

In 2017, all but 2.2% of patients underwent surgery for hip fracture, though this figure varied around the country; from 0% in three units, to as high as 11.6% in Southport and Formby District General Hospital.

Bronglais Hospital, Aberystwyth and Princess Royal Hospital, Telford reported that over 5% of patients did not receive surgery in 2016 and again in 2017. Nine other hospitals also reported that over 5% of patients did not receive surgery in 2017 – County Hospital Hereford; New Cross, Wolverhampton; St Richard’s, Chichester; King’s College Hospital; Mayday Hospital, Croydon; Scunthorpe General Hospital; Glan Clwyd Hospital, Rhyl; Wrexham Maelor Hospital; and Noble’s Hospital, Isle of Man.

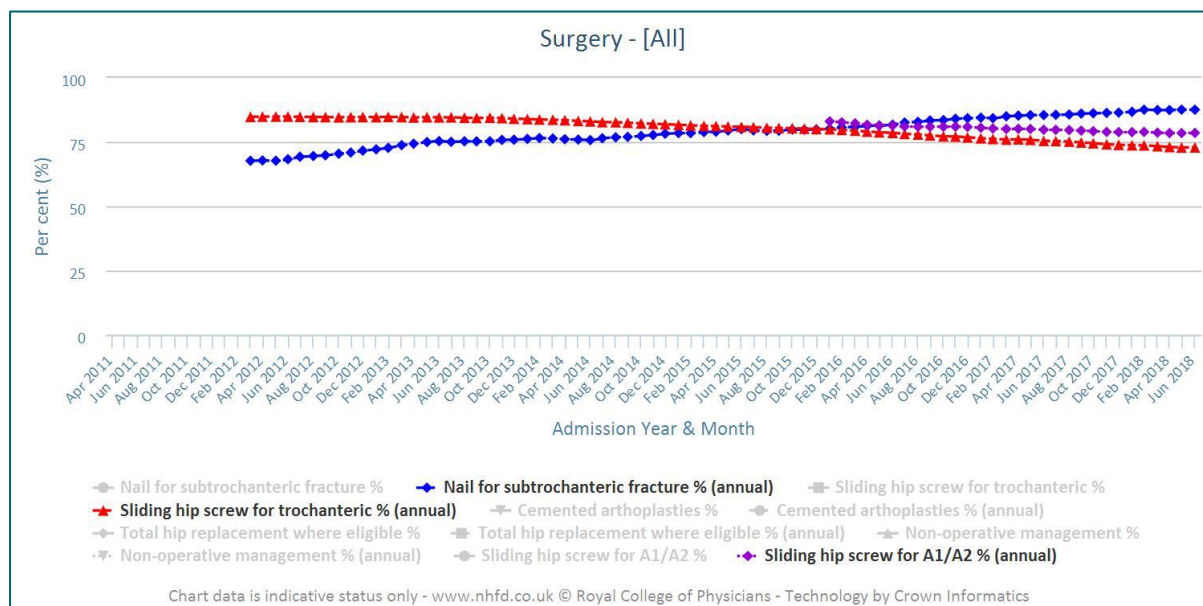
Operative approach

The surgical techniques appropriate to different types of hip fracture have been extensively examined by NICE in CG124 and QS16, as illustrated in the infographic alongside [Key performance indicator 3](#) earlier in this report and in the charts under ‘Measuring the quality of perioperative care’ above and ‘Use of intramedullary nail’ below. NHFD run charts, tables and dashboards report this in detail.

Use of intramedullary nails for A1/A2 intertrochanteric fractures

A perplexing trend is the falling rate of sliding hip screw (SHS) usage for A1 and A2 intertrochanteric fractures, despite lack of robust evidence of superiority of long and short intramedullary (IM) nails and significant financial savings to be had by using a SHS rather than an IM nail as recommended by NICE. Trainee indicative numbers may play a part in this recent increase. Southampton General Hospital (SGH) reports that just 3.4% of patients with A1/A2 fractures in their unit are receiving SHS.

In 2017 we introduced a new run chart (see chart below) which allows local teams to specifically examine their use of SHS in repairing A1/A2 hip fractures. This shows that compliance with NICE guidance has reduced further over the course of this year – falling from 80.9% in 2016 to 78.8% in 2017.



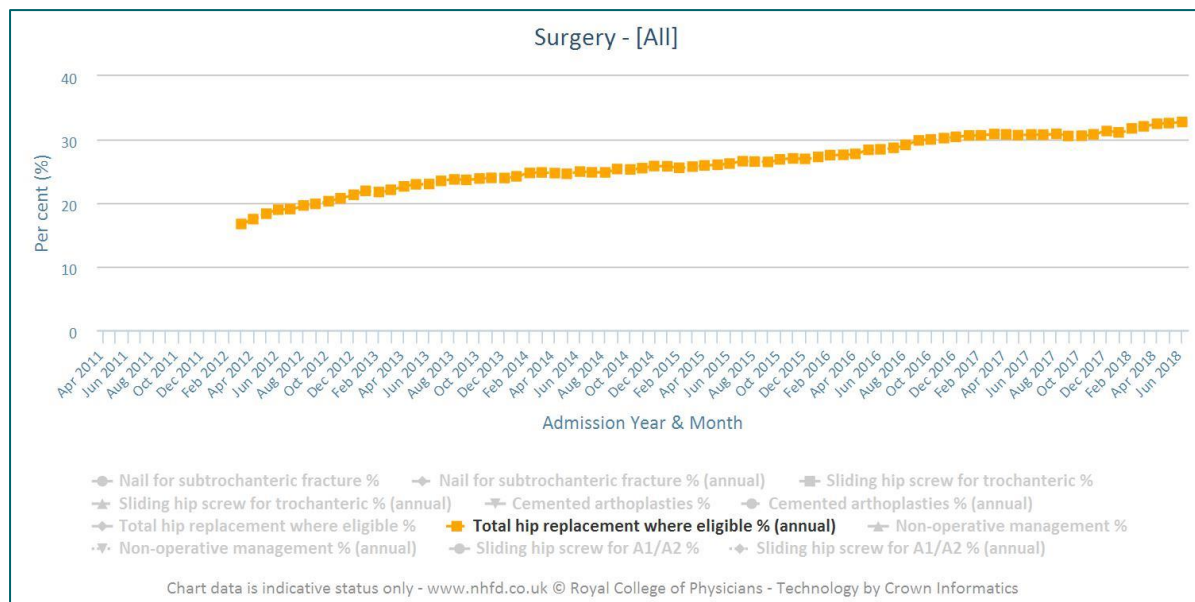
The vast majority of patients across the NHFD with subtrochanteric fractures are receiving IM nails as fixation of choice as per NICE guidance. However, Grantham and District General Hospital (GRA) reports that 0% are treated with an IM nail. Good Hope General Hospital reports that just 11.1% receive an IM nail and the University Hospital of North Tees reports a 14.6% rate of IM nail usage for patients with subtrochanteric fractures.

Use of total hip replacement for eligible patients

In its recent update of [CG124](#) and [QS16](#) NICE reaffirmed its previous recommendation about the appropriateness of total hip replacement (THR) for displaced intracapsular fracture in people who were previously mobile and in good physical and mental health.

Our run chart profiling rates of THR for displaced intracapsular hip fracture (see chart below) shows a national trend of continuing improvement (reaching 31.4% in 2017). However, we continue to see enormous variation in compliance with NICE's recommendations, with units reporting rates that vary from 0–100%.

The provision of total hip replacement (THR) for patients deemed eligible by NICE standards has steadily risen across the country but there remains significant variation between units. The George Eliot Hospital (NUN) and the Prince Charles Hospital (PCH) report that 0% of eligible patients admitted to their units with displaced intracapsular fractures receive a THR.



3. Improving the organisation of services

Clinical leadership

The importance of local clinical leadership of hip fracture care and responsibility for the collection and use of NHFD data is demonstrated in that it is now recognised in the job plans of 71% of orthopaedic surgeons and 76% of orthogeriatricians.

A total of 155/175 units (89%) report that they have appointed an anaesthetist to a complementary clinical lead role. In 107 hospitals this responsibility is apparently recognised in the anaesthetist's job plan, though only 45 anaesthetists have so far applied for access to the NHFD website. This is a particular concern if we wish to further develop our analyses of anaesthetic technique, and given the importance of ASA data quality to our casemix adjustment model for 30-day mortality analysis.

Three-quarters (75%) of units now report that all three clinical leads attend monthly clinical governance meetings. In most cases these are formally minuted (85%) and examine NHFD data alongside local QI work (89%), though patient feedback is only discussed in a minority (37%).

Orthogeriatric care

Previous NHFD reports and a number of academic papers have linked improvements in quality and outcome of hip fracture care to investment in orthogeriatrician support for this frail group of patients ([Neuburger *et al* 2017, 2018](#); see thumbnail).

In 2017 we recorded 91.2% of patients as having been assessed by an orthogeriatrician within 72 hours of presentation, very similar to the 90.8% figure we reported last year.

In England, investment in orthogeriatrics was incentivised by best practice tariff (BPT) and 93.2% of patients received perioperative assessment in 2017. The corresponding figure was 83.3% in Northern Ireland, and just 63.3% in Wales.



Admitted to aftermaths ward within	Mean test score recorded on admission	Percentage referred to physiotherapy	Physiotherapy sessions by the day after surgery	Should not be able to sit the day after surgery	Nonfunctional limb	Defective movement	Required limb support	Relevant functional loss	Mean pre- operative score
30.4	95.7	83.7	87.2	100.0	90.1	52.0	9.8	90.5	98.4
32.5	95.7	83.7	87.2	100.0	97.1	8.6	14.8	90.0	98.4
44.5	95.3	83.7	86.8	62.5	95.1	8.6	91.1	91.1	97.2
45.0	95.3	83.7	86.8	62.5	96.0	9.7	90.0	98.5	98.4
45.0	95.0	82.1	86.4	90.9	98.0	9.0	98.2	98.2	98.4
45.0	95.0	86.0	96.4	92.9	98.0	9.0	98.2	98.2	98.4
45.1	95.0	84.9	84.9	84.9	97.8	9.0	98.2	98.2	98.4
45.1	95.0	86.8	93.6	73.0	84.0	2.0	98.0	73.0	98.4
28.0	97.5	94.9	88.6	85.5	97.7	12.8	98.4	98.5	99.3
32.0	97.5	94.9	88.6	74.5	98.6	10.2	96.5	97.5	99.3
32.0	97.5	94.9	88.6	73.0	98.6	10.2	96.5	97.5	99.3
42.0	97.2	95.0	93.5	96.5	97.1	8.7	100.0	97.4	96.5
42.0	97.2	95.0	93.5	88.5	96.4	27.3	99.0	99.5	96.5
42.0	96.5	96.7	95.0	96.7	96.7	9.0	98.2	97.5	96.5
37.4	96.7	94.2	94.2	70.1	88.1	25.8	99.0	98.2	96.5
37.9	95.6	98.7	95.2	73.3	84.6	54.7	96.1	96.7	95.2
42.0	95.6	97.5	95.2	73.3	86.2	57.8	97.4	94.5	95.2
28.7	97.4	92.3	96.7	88.3	85.6	45.5	94.8	99.0	97.0
29.9	97.6	95.9	94.0	86.1	82.1	38.0	73.5	94.8	97.1

There has been a slight reduction in BPT eligibility across England, with 58% of all cases attracting the additional tariff in 2017 compared with 61% in 2016. This was anticipated as it reflects the new challenge posed by three additional BPT criteria introduced in 2017 (see table below).

2017 changes to Best Practice Tariff

Existing BPT criteria that remain unchanged

- Time to surgery within 36 hours of presentation
- Assessed by a geriatrician within 72 hours
- Preoperative cognitive test using the AMT score
- Assessment for bone protection
- Specialist falls assessment

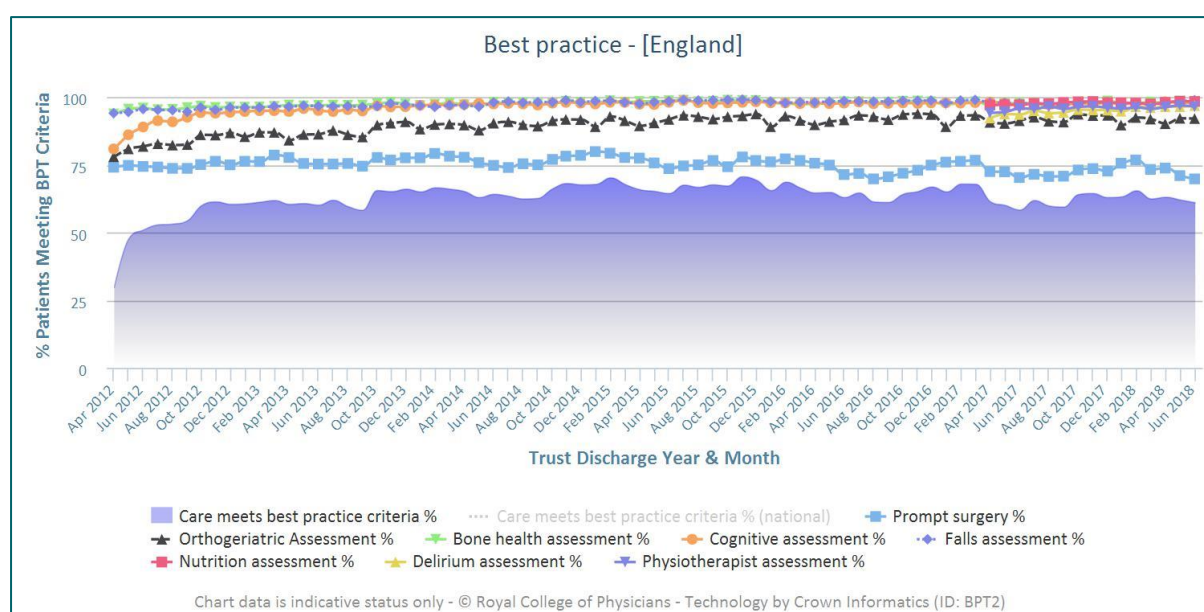
Criteria removed in April 2017

- Joint assessment protocol
- Postoperative repeat of AMT score
- Multidisciplinary rehabilitation assessment

New criteria since April 2017

- Nutritional assessment on admission
- Postoperative delirium assessment using the 4AT tool
- Assessed by a physiotherapist on the day of or the day after surgery

The delivery of these performance markers in England is shown in our [best practice run chart](#) (see chart below).



4. Understanding the outcome of hip fracture

Return home

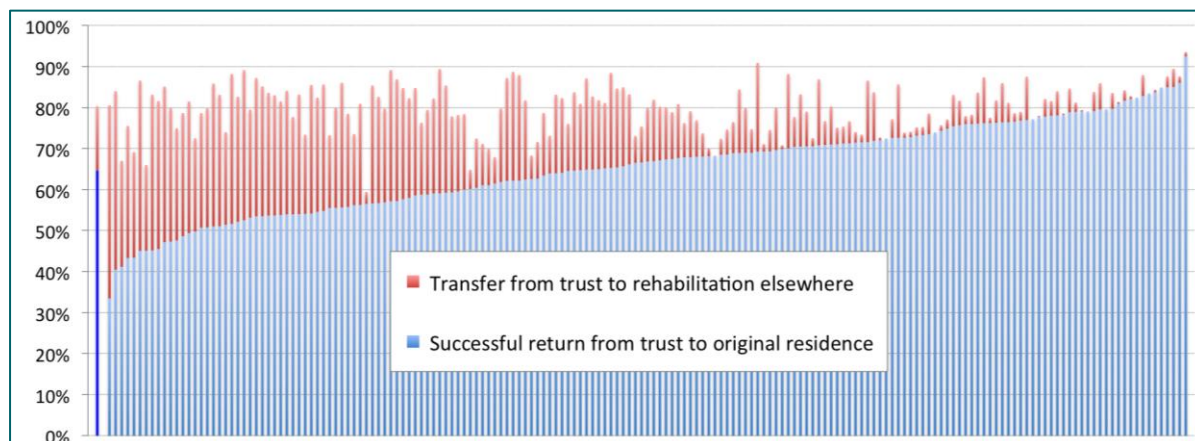
The NHFD emphasises the need to know whether people successfully return home after hip fracture. NICE recommended that hip fracture teams '*should have clinical and service governance responsibility for all stages of the pathway of care and rehabilitation – including those delivered in the community*' ([CG124, NICE 2011](#)).

Most older people view having to move to a nursing home after a hip fracture as a worse outcome than death ([Salkeld et al 2000](#)). In spite of this, many hip fracture services are unable to report whether their patients return home.

On average 64.3% of people return to their previous residence from the acute trust, but this figure

varies between 33.4% and 92.5% in different units (see chart below).

Much of this variation is explained by huge differences in how many patients are transferred to other trusts and units for rehabilitation and some hip fracture teams appear to have no way of knowing whether this rehabilitation was successful.



120-day follow-up is particularly important for hip fracture services, which routinely transfer a large proportion of patients to continue their rehabilitation in other trusts or settings.

The completion of 120-day follow-up (the proportion of people for whom 120-day data on both mobility and bone treatment were received) improved slightly from 37.4% in 2016 to 38.4%, in 2017.

These data can be used to complement those on trust discharge destination to monitor the proportion of patients known to have returned to their original residence by 120 days – a figure that remained unchanged at 67.5%. This is the basis of the new [key performance indicator 6](#), described earlier in this report.

End-of-life care

Although mortality has reduced since the NHFD was established, the typical patient is an 82-year-old woman with more than one significant comorbidity – so end-of-life care must remain a key aspect of the support orthopaedic and orthogeriatric teams provide to patients and their families.

In their responses to the [NHFD Facilities Audit](#) two-thirds (67%) of units reported that a treatment escalation plan was routinely discussed with the patient or those important to them as a part of the admission clerking process.

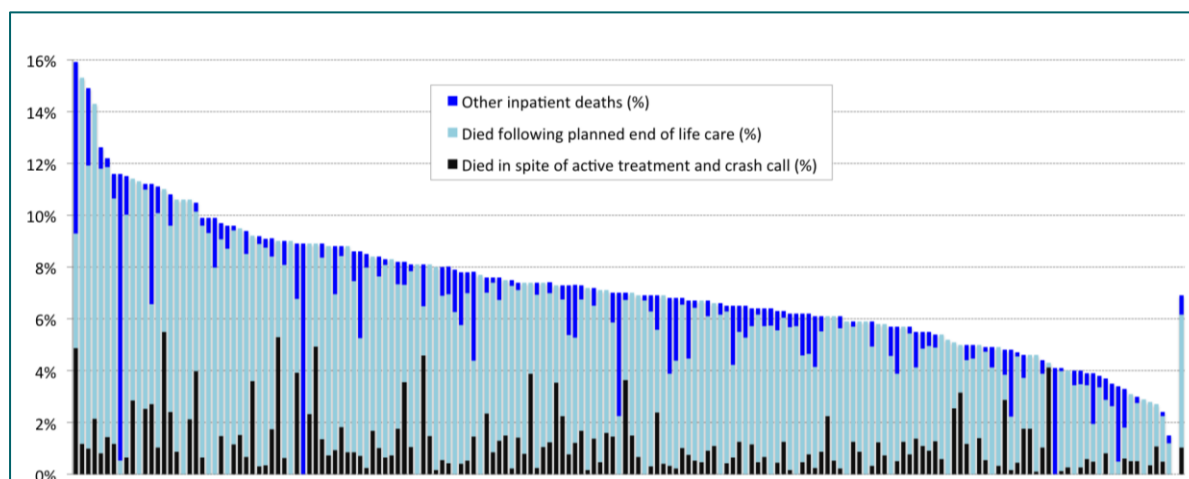
However, descriptions of policy and expected normal practice are often not borne out when audit examines the care that is actually provided to individual patients, so since 2017 NHFD has asked hip fracture teams to review the care offered to people who died as an inpatient following hip fracture.

This request is designed to stimulate investigation by local teams, so that the root cause of each death is identified and can inform clinical governance and quality improvement processes.

We specifically ask that clinical teams identify which patients died following a crash call, as opposed to those in whom the end of life had been anticipated and managed following appropriate discussion of care priorities with the patient, their family and their carers.

During 2017 a total of 4,541 people (6.9%) died as an inpatient. In 74.3% the patient's death had been anticipated and appropriate end-of-life care was already in place.

In 14.9% of cases the death was recorded to have followed active treatment including a crash call. However, rates of crash call showed dramatic variation – ranging from 0% in some units, to more than 50% in 10 (5.7%) of the 175 hospitals (see chart below).



For a further 10.8% of all people, death did not appear to have been so clearly anticipated with a move to an appropriate focus on end-of-life care, though this had not included a crash call or cardiopulmonary resuscitation.

Alongside performing root cause analyses of inpatient deaths clinical teams should consider the appropriateness of crash calls in individual cases. Hospitals which we identify as having unusually high and unusually low rates of crash calls might wish to examine their policies for identifying patients' wishes and the appropriateness of 'do not attempt cardiopulmonary resuscitation' decisions.

Eight hospitals (4.9%) reported that over half of deaths followed an unsuccessful crash call. We notified these units so that they could examine local policies over end-of-life decisions and the appropriateness of escalation of treatment. Hip fracture is a marker condition for the care offered to all frail and older inpatients, so conclusions about planning of end-of-life care in trauma units may have implications for practice across other departments of these hospitals.

5. National Audit of Inpatient Falls

From this year the Falls and Fragility Fracture Audit Programme will be redesigning the National Audit of Inpatient Falls (NAIF) to transition from the previous approach of a 'snapshot' audit every 2 years, to provide for continuous data collection in future.

We will be refocusing NAIF on patients who fall and sustain a hip fracture in any NHS setting: acute hospitals, mental health hospitals and community hospitals, using the NHFD to flag all patients who have sustained a hip fracture after a fall in an inpatient setting.

NAIF will then collect data on preventative actions taken or not taken, assessment after the fall (using NICE quality standards) and critical incident reviews.

References and bibliography

The references cited in this report can be accessed [here](#) on our website.

Get in touch

For further information please contact us – we look forward to hearing from you.



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[falls&fragility@RCP_FFFAP](https://twitter.com/falls&fragility@RCP_FFFAP)

National Hip Fracture Database (NHFD)

The NHFD monitors the care of all hip fracture patients in England, Wales and Northern Ireland who are aged 60 and over, feeding back performance data to hospitals to facilitate quality improvement.

- > www.nhfd.co.uk
- > nhfd@rcplondon.ac.uk
- > +44(0)20 3075 2395

Falls Pathway Workstream

The Falls Pathway Workstream carried out the National Audit of Inpatient Falls (NAIF) snapshot audits in 2015 and 2017, with continuous audit planned for 2018. NAIF is a national clinical audit measuring compliance against national standards of best practice in reducing the risk of falls within acute, community and mental health NHS trusts and health boards.

- > www.rcplondon.ac.uk/fffap
- > falls@rcplondon.ac.uk
- > +44(0)20 3075 1511

Fracture Liaison Service Database (FLS-DB)

The FLS-DB aims to improve the quality of care for patients at risk of fractures by enabling NHS organisations to compare outcomes, identify and share best practice, identify gaps or shortfalls in commissioning services, and provide a comprehensive picture of fragility fracture care.

- > www.rcplondon.ac.uk/ffsdb
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- > +44(0)20 3075 1511

