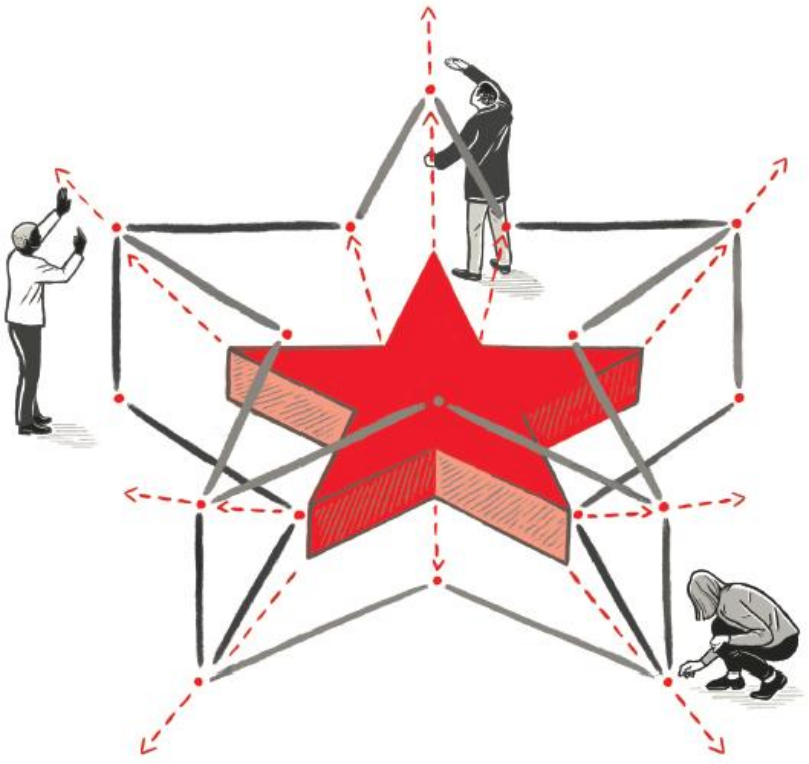
Final Evaluation Report

Scaling Up Improvement Round 2

Scaling up for safety: standardising the lessons learnt from HipQIP



October 2018

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Background and objectives

The HipQIP Scaling Up project is a multi-centre quality improvement collaborative funded by the Health Foundation and led by Northumbria Healthcare NHS Foundation Trust. It focused on improving care and outcomes for people presenting to hospital with a fragility hip fracture.
Hip fracture is the most common serious injury for older people and the most common reason for them to need emergency surgery. Emergency hip fracture care costs the NHS more than £1 billion a year and the length of hospital stay represents the largest portion of the cost. Patients may remain in hospital for several weeks, occupying around 1.5 million bed days each year, equating to the continuous occupation of more than 3,600 NHS beds across England, Wales and Northern Ireland.

A decade of evidence from the National Hip Fracture Database (NHFD) has shown how the Hip Fracture Programmes recommended by NICE improve the quality and outcome of care.

The quality improvement aims of the HipQIP scaling up project were to:

- Provide hip fracture care of the highest quality
- Introduce a pathway approach that ensures consistent care
- Ensure that recent evidence and national standards are systematically implemented
- Provide exceptional patient experience – meeting physical, emotional and information needs.

Central to these aims were a number of specific objectives:

- More lives saved with safer and best practice care
- More lives saved through increasing nutritional support after surgery
- More lives saved with access to surgery within 36 hours
- More lives saved with patients supported to mobilise as early as possible after surgery
- Better access to specialist care for elderly patients with complex medical problems
- Better access to information to enable patients to manage their own care
- Better access to guidance that helps patients know what good care looks like
- Better pain management.

Six collaborative sites were recruited in 2016, and began routine data collection of agreed HipQIP and local metrics from January 2017. One site (GLW) experienced a number problems participating in the collaborative and is not included in this report. One of the sites, acted as an "exemplar site" (SCM), as they had previously successfully piloted similar QI strategies and their outcome data is not reported as part of this evaluation.

Key findings

Across the four English HipQIP hospitals 30 day mortality fell from 9.2% in the year before the scaling up work started; to just 5.8% for people presenting in the year to August 2018 ($p<0.001$).

Mortality also fell in 16 matched Control hospitals which were recording the same 30 day mortality figure at baseline. But improvement was more limited; only falling to 7.7%.

The four English HipQIP Collaborative hospitals recorded 119 fewer deaths than would have been expected if mortality had remained at the baseline figure of 9.2%.

The true impact of the HipQIP intervention is shown by the fact that the Collaborative hospitals prevented 77 deaths – above and beyond the effect of any changes the Control hospitals made in the same period, in response to the same poor baseline performance.

However, it is not enough to show that deaths have been prevented, or in fact just delayed in this population of very frail people, many of whom are coming to the end of their lives.

Older people place greater priority on their independence and Scaling Up work focused on whether patients who are admitted from their own home successfully returned to live there.

Collaborative and Control hospitals were matched on their performance at the start of the scaling up work, so it is unsurprising that rates of return home were initially similar at 50%.

Over the Scaling Up project there was a slight improvement to 51.1% in the Controls, but a greater improvement to 56.9% in the Collaborative hospitals – each year an additional 119 patients successfully returned to their own home as a result of the Scaling Up work.

The collaborative approach to the programme and the supportive learning environment that had been created had added considerably to the project's success and this had been greatly appreciated by all of the teams. Staff had also benefitted by improved team-working and a renewed sense of purpose.

Particularly helpful in gaining essential organisational support had been the independent peer evaluations as these had provided a baseline of where the trusts currently were and where they should focus their efforts.

The most successful interventions were those that the teams could control and influence.

Project evaluation

The evaluation plan for the project consisted essentially of two main elements: the evaluation of the project outcomes and a formative evaluation of the project implementation and progress (process evaluation).

The Process Evaluation

The process evaluation consisted of semi-structured interviews undertaken in each of the participating Trusts, reading of the peer reviews conducted by the British Orthopaedic Association (BOA) to provide background knowledge of the Trusts and the services offered to patients with fractured neck of femur. The evaluator (Dr Win Tadd) also attended the programme launch and each of the learning events throughout the programme.

Process Evaluation Methodology

An interim evaluation involved 68 semi-structured interviews undertaken between April and July 2017 the results of which were reported in September 2017.

This was followed by 50 semi-structured interviews (see Appendix C) undertaken in the 5 remaining Trusts during May and June 2018.

The interviews covered the following topics:

- The progress of the HipQIP programme during the final year
- What achievements and outcomes the teams were most proud of
- What if, anything, they would have done differently
- What the key difficulties had been
- The data collection and measurement
- The support received from Northumbria
- The effect of being part of a collaborative
- The key lessons learned about QI
- Whether the improvements made are sustainable.

A mix of staff were interviewed in each Trust, including consultant orthopaedic surgeons, consultants in emergency medicine, anaesthetics and orthogeriatrics, ward managers and nursing staff of a variety of grades, nutritional assistants and dietetic staff, patient leaders, physiotherapists, occupational therapists, and senior Trust managers including Heads of Service, General Managers, Trauma and Theatre leads and Information analysts.

All participants were given a verbal explanation of the purpose of the evaluation activities and of what use would be made of the information they provided. Explicit verbal consent was sought to digitally record the interviews and for any anonymous citations to be used in any ensuing publications including formal reports. All interviews and conversations were recorded digitally and transcribed verbatim.

Once transcribed, all audio recording were erased. Transcripts were coded so that all identifying information was removed to ensure anonymity and protect confidentially.

Presentation of the Findings

The findings from the process evaluation have been integrated throughout this report to provide an account of how the improvement and scaling-up programme was implemented and how well it has achieved its aims. An initial discussion of the approach to the scaling-up programme is followed by process findings within the discussion of the results of the performance indicators to add context and additional insights as to why these may be as they are. Finally, following the outcome evaluation additional insights from the process evaluation are included to conclude the report.

Outcome Evaluation

The Falls and Fragility Fracture Audit Programme (FFFAP) is a national clinical audit programme commissioned by the Healthcare Quality Improvement Partnership (HQIP) as part of the National Clinical Audit and Patient Outcomes Programme (NCAPOP). FFFAP is managed by the Care Quality Improvement Department (CQID) of the Royal College of Physicians (RCP) and consists of three national audits: NHFD, the Fracture Liaison Service Database (FLS-DB) and the National Audit of Inpatient Falls (NAIF).

This evaluation, alongside provision of ongoing formative data to collaborative sites and the Northumbria project team, was undertaken by the FFFAP team. This evaluation is delivered under contract by the RCP and is accountable to Northumbria as the prime contractor and the FFFAP programme board.

Clinical leadership for the outcome evaluation is provided by Dr Antony Johansen who is an experienced clinician with two decades leading clinical audit in this field, who has co-led the NHFD since 2013.

Information governance

Collection of patient identifiable data (PID) for the NHFD in England are covered under 'Section 251' approval (Section 60 of the Health and Social Care Act 2001 re-enacted by Section 251 of the NHS Act 2006) (references: CAG 8-03(PR11)) and are subject to annual review by the Confidentiality Advisory Group (CAG) of the Health Research Authority. An annual review submitted in September 2016 confirmed that the additional data uses and non-identifiable data items required for this project were included in these permissions.

Mortality data for English hospitals is provided by linking NHFD data and the Office of National Statistics (ONS) data on a quarterly basis and is subject to the same permission described above alongside routine application to NHS Digital for linkages.

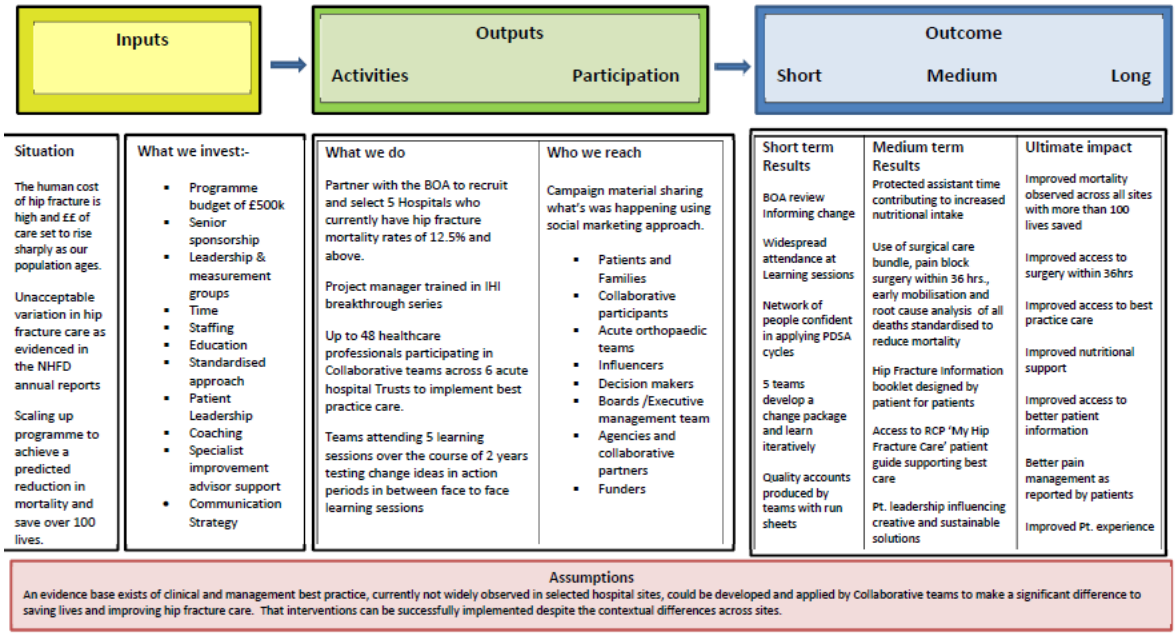
All patients whose data is entered onto the NHFD are provided with fair processing materials approved by the CAG. Details can be found at www.rcplondon.ac.uk/projects/outputs/fffap-data-processing-statements

Routine data collection of agreed HipQIP and local metrics began in January 2017.

All four English sites (NSE, GLO, PMS, WGH) were routinely collecting a series of performance measures as part of their participation in the NHFD. It was not possible to collect comparable data for GLW and this site is not included in this evaluation.

Data were also available for "the exemplar site" (SCM) – which had previously successfully piloted similar QI strategies, but this report describes performance in the four English units.

Project logic model



Outcome Evaluation Methodology

Data collection began in all sites in January 2017. English sites contributed data using a bespoke module of the NHFD data platform developed by Crown Informatics. Monthly extracts of data were provided to the RCP to supply sites with dashboards of monthly performance data. Key data items included in the NHFD dataset are also available as real time run charts at www.nhfd.co.uk/charts until March 2019

These HipQIP specific dashboards will remain viewable until the end of March 2019.

For the purposes of this final evaluation performance data for (a) the four sites individually, and (b) the combined data for all four sites, were set against:

- NHFD figures for national performance across all 177 trauma units across England, Wales and Northern Ireland.
- Performance data for a set of 16 "Control sites" – a series of NHFD sites blindly selected so that their combined 30 day mortality was the same as that of the four "Collaborative sites" in the year prior to the start of the HipQIP intervention in September 2016.

Key study metrics were selected by the project team and consist of three sets of measures:

- National performance measures already collected as part of routine NHFD audit work
- Additional HipQIP performance measures collected by the HipQIP sites
- Locally agreed measures intended to focus on areas of local concern.

The HipQIP metrics include 10 specific metrics (three of which relate to patient experience) and 13 already collected via the NHFD. A full breakdown of metric calculations is in the Appendix A

Data presentation

Month to month and seasonal variation in numbers of patients presenting and in performance measures mean that graphical presentation of monthly data shows wide variation and is difficult to interpret.

For this reason the NHFD routinely presents 'annualised data'. This means performance figures under any specific month are derived from data for that month and for the previous 11 months.

The outcome evaluation has adopted the same approach as the HipQIP hospital teams are familiar with this approach from their routine use of the NHFD website to guide their local clinical governance.

Data collection for the HipQIP specific metrics only started in January 2017, and these metrics show slight fluctuations in the first few months, until the data settles with once a whole year's data is available to support full annualisation.

Key to site codes

NSE	Northumbria Specialist Emergency Care Hospital
GLO	Gloucester Royal Hospital
WGH	Weston General Hospital
PMS	Great Western Hospital, Swindon
SCM (exemplar)	James Cook University Hospital, Middlesbrough

The Approach to the HipQIP Scaling –Up Programme

The approach to the HipQIP scaling-up project was based on the IHI Breakthrough Series Collaborative model, which is a short-term learning system that brings together a number of teams seeking improvement in a focused topic area. Each team was asked to send between five and seven members to attend five Learning Events (including launch and celebratory events) over the course of the collaborative, with additional members working on improvements in the local organisations.

Each Learning Event was intended to provide guidance in the theory and practice of improving performance in the collaborative's specific topic area and to function as a milestone along the improvement pathway. At these events each team reported on their methods and results, reflected on any lessons learned, and planned for future changes during the next action period, whilst receiving direct access to each other and senior experts in the field. Support was offered between Learning Events in various ways including regular conference calls, WebEx sessions, frequent written updates, and if needed on-site mentoring visits.

Between the Learning Events action periods enabled the teams to test and implement changes in their local setting, collect data to measure the impact of the changes and submit monthly progress reports based on their individual Quality Accounts. Thus, the aim of the approach was to build collaboration whilst supporting organisations as they try out new ideas.

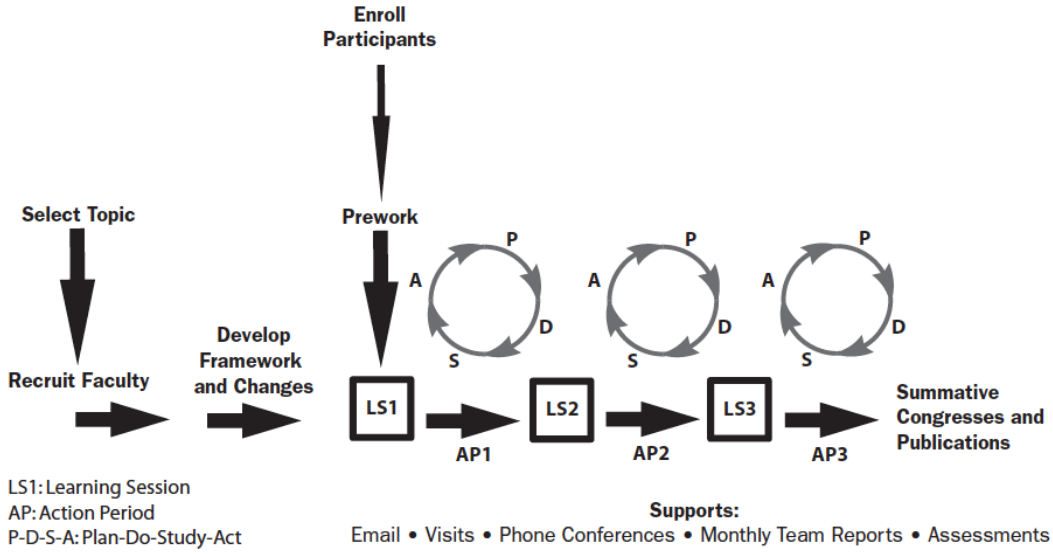


Figure 1: IHI Breakthrough Series Model (IHI, 2003)

To apply changes in their local settings, the Model for Improvement was adopted, which identifies four key elements of successful process improvement: specific and measurable aims, measures of improvement that are tracked over time, key changes that will result in the desired improvement, and a series of testing "cycles" (Plan Do Study Act (PDSA)) where teams learn how to apply key change ideas to their own organisations and practices.

This approach was extremely successful and all of the teams were positive about the advantages it offered such as capturing successful strategies and sharing these amongst the collaborative. All of the teams were also very positive about the honesty with which members shared both their negative and positive experiences and how good relationships had been built across the whole collaborative.

> *"I think it's been really helpful overall. Yes I do and I think the biggest thing has been that being part of this national improvement programme has opened board level doors and got us interest from the Trust to make these improvements. We're coming off the at risk register this week and I don't know if we would have done that without joining this collaborative. Would I join another one? I think I would. I was sceptical when we started but I think it's been very helpful on a number of levels."* (GLO)

> *"So the collaborative has been really, really useful I think. I mean I've contributed myself, but I've probably got as much out of it as I've put in. So we're probably on equal measures. Having people just saying, 'I've looked at this, has anyone else had a look at it?' and then to get stuff that way. Hearing the way that other people do things and you know, whatever, is - I think it helps both with ideas but also it helps work out where you are on the bell curve, like to see where your performance is. Because often with these things you - I mean for most of us we kind of all assume that we're not as good as everyone else is and so it's actually quite nice to see someone saying, look you know, you're like, well actually we're a bit better off. So the collaborative part of it was fabulous and I think even setting up a collaborative in its own right would have benefits and would probably save lives because of the way that things are. So I think that was really useful."* (SCM)

> *"I think the collaborative was a huge part of our success. It just worked, there was support and the sharing of knowledge. There was also a great deal of honesty you know no-one was trying to hide what was problematic or anything. It was really great. I think initially we felt 'Oh they're better than us' but we learnt from others how could we do it. It was also really supportive and hopefully we are going to create our own collaborative in the south-west where we can meet annually. So yes the collaborative has been really valuable especially getting us out of the local bubble, it was excellent for the team as a whole you know, team building and it sort of formalised or highlighted areas that would have been difficult for us otherwise."* (WGH)

The teams had found this so successful that they were hoping to establish local 'collaboratives', for example, one in the south- west and one in the north-east, to maintain relationships and continue to share improvements.

The British Orthopaedic Association (BOA) Review

A key strategy of the scaling – up programme was that all sites would receive a peer review coordinated by the BOA. The purpose of the review was to provide an overview of the standards of hip fracture care in each trust. The BOA peer review supported by the Royal College of Anaesthetists, British Geriatric Society and Society of Orthopaedic Trauma Nurses, is aimed at assessing standards of care, as set down by current NICE guidance (Quality Standard 16 and Clinical Guideline 124), BOA Standards for Trauma (BOAST 1), Association of Anaesthetists guidelines for hip fracture anaesthesia, and best practice tariff, together with other metrics collected by the NHFD.

The review involved a pre-visit questionnaire, a peer review visit and an agreed final report. The process included understanding the whole patient pathway revealing problems with systems rather than individuals. The reviews provided a baseline and detailed understanding of organisational context and challenges faced within each trust.

Although initial anxiety was felt by each of the teams at the thought of an external review of their practices, all felt that the process and the work involved in data gathering information prior to the review had been very helpful especially in gaining Board level support and acknowledgement of what was needed to bring about service improvement. Such recognition is essential in convincing people that a problem exists (Dixon-Woods et al, 2011).

> *"We found the BOA review very helpful, a lot of work but very helpful to be able to say this has been recommended by an external review, these are the things we need to do so the Trust's management is on board and we've had well not only senior buy in but at clinical level too."* (PMS)

> *"I think I liked the style how they initially presented their findings to us, and then brought in the senior managers and the directors. And I think that gave us confidence, observing that process, it was key actually in getting their support for what we needed to improve you know it wasn't just coming from us, it was coming from the BOA."* (WGH)

Learning Events

Throughout the programme five learning events were held, and overall these were very well attended and received by each of the teams. The content and structure of the events 'worked well, they were varied and seemed to cover exactly what was needed at the appropriate time' (PMS). Particularly useful was the time spent together by staff in various roles, which enhanced understanding of the different roles, as well as the opportunity to network across teams and share resources. Teams also found a useful consequence of the learning events, was the necessity to travel together, as that time was used for further discussion and planning.

> *"Yeah they were really good and we always came away from them sort of re-focused, re-energised, with lots of ideas, it was really good. Then sort of as they went on, then you got to know people and you could - I mean I asked someone from Gloucester for their return to ward protocol - because they mentioned it in one of their presentations, I was like 'Oh do you mind if we have a look at it', as there's no point reinventing the wheel. Obviously it was designed for them, so we had to adapt it for us, but it was just nice to see what other people are doing and the collaborative nature of the learning events was definitely the big bonus of that."* (GLO)

> *"They were good, yeah, again it's seeing what other people do and we've brought stuff home and changed it a bit and done a little bit on the ward and changed things, so it's been good, yeah. I really enjoyed the learning events, it was nice to go round the country, meeting new people and it was good for us to travel as a team, just getting away from the hospital as a team, you know, in a social event type of thing has helped us to develop our team building too. It was good to meet – sometimes you didn't know who you were talking to, you know, which discipline they were from, but then they might seek us out or we would seek them out and discuss things and yeah, it was really good. It's a shame it's going to end to be honest, because we did look forward to our little trips away."* (SCM)

> *"I think the main utility of the regular meetings was actually revitalising and rekindling and just maintaining enthusiasm, and I think that was its main utility, and everyone to share it. You could see people boosted by every meeting; we all got reintroduced so that was a great thing and we changed our hip fracture meeting format on the basis of one of those meetings, so the highs and lows, where do we go; that came directly from the goldfish bowl session."* (PMS)

The lead team were also positive about how the learning events had developed and felt their impact was visible in terms of building capacity and confidence in the participating teams.

> *"With every learning event, there were signs of the Northumbria team stepping back and the collaborative taking over. You know, the first time we ran the moving round the room where they would have fifteen, twenty minutes themselves, you just saw people*

transformed, people that had been quite under-confident and really nervous in the beginning, at the launch event, compared to how they are at the end, in terms of confidence, in belief, that has been really reassuring." (NSE)

If there was one criticism it was that the final event was held too early and a further event should have been held at the end of the data collection, to review as a group, what had worked well, what had not and how to maintain momentum in the future.

Support offered by the lead team

The collaborative found Northumbria to be very supportive throughout the programme. The training offered to the teams on nutritional support and measuring patient experience was positively received.

"*Yeah it's been fine. Again, I can't fault that. I mean so many people are - people have been really approachable and very willing to share resources and tools and things. The coaching calls, I don't know, I've had kind of mixed feelings about those because they were very helpful in the beginning but they seemed to be very, very frequent and you know, we're really busy and I think it would have been easier to have a check that you're doing X, Y and Z, on an email, and maybe quarterly calls. It did help but I think monthly for that purpose, monthly was too much. But yeah support wise I mean it's been fine*. (GLO)

"*The last 12 months have been amazing everyone was very responsive and supportive. The coaching calls were very good and answered all of our questions but they were difficult to arrange, as everyone's diaries are so full. I found them most useful when there was more than 1 trust on the call at one time as you could hear different views as we went along.*" (WGH"

"*I thought that Northumbria were fabulous. The training was great, they were very approachable and responsive whenever there were queries.*" (PMS)

There was only one area where teams found the support lacking and that was related to the confusion experienced around the operational definitions for the common metrics in the first 6 months of the programme. Four metrics were particularly troublesome: nutritional input; early warning scores; considered for critical care; and daily mobilisation.

"*I just think that the support was hampered by the initial lack of clarity. So are we, when's day zero. Well for Gloucester, day zero is whatever. Hang on, so what's a snack. Well you know, it depends in your Trust what you - so I get it but - so I think they were as*

helpful as they could be and nothing as a process. I certainly didn't feel like I couldn't ask or I didn't know where to go to. I knew who to - you know, or whatever, but yeah I wish we'd nailed that sooner." (SCM)

"*No I didn't like that. It got into an awful mess of people not even understanding what you meant by extra feeding? Do you remember when we got that data matrix yeah? We had to come up - no-one had a clue and then they said, what do you want to - do you want to collect as well, tick which one you want to collect. Some people were getting a hundred percent and we were not scoring very well because we didn't know what we were doing. I mean, that was crazy! I think that, you know, it should have been decided what the minimal data was and by all means if you've got time and you want to collect other stuff, do so. But this is the data we must have and this is what that definition - that statement there actually means. If I was going to be very honest about that, the core metric data collection is too much. This is - and then you add more on as well and the dietician data - the nutrition data is too much, the patient experience data, I mean we're lucky in the fact that we've got the team but they're grumbling about it now. But they've collected it. However...* "(GLO)

This highlights one of the key difficulties in scaling up work in that there is a balance, to be struck between being didactic and allowing teams the freedom to interpret and introduce interventions in ways that make sense in the individual organisation or context, however the failure to agree tight operational definitions did create confusion which lasted until these were finally agreed in July 2017.

This was well recognised by the lead team:

"*You want to bring everybody on board and we were very conscious about not saying, "This is the solution" because we don't believe that and scaling up efforts and local solutions are just so critically important. But I wish we'd been more explicit in the very beginning, particularly around patient experience measurement and the manner in which certain things had to be done. I think going out and saying "Well it doesn't really matter how you do that find your own solutions" you pay the price when it's then not done in a way that delivers. So I think there was far earlier work that we could've done around operational definitions. We could have been really clear about and I think now we would try to do that more explicitly earlier on. So there was that, and I think we probably could have tightened up the measurement framework a bit earlier on*." (NSE)

Key findings

There was an impressive, consistent pattern of success in implementation of quality improvement (QI) measures across the two years (September 2016—August 2018) of the scaling up project.

Only two measures showed a negative trend. It is of note that these relate to those aspects of care (prompt X-ray in the Emergency Unit, and prompt surgery) that are most sensitive to increasing pressures on acute trauma services, and over which the HipQIP teams may have little direct control.

In all other respects the HipQIP teams recorded performance that initially equalled or exceeded the national averages reported by the NHFD, and/or those recorded in 16 matched Control hospitals.

In addition, for each measure of performance, patient experience and outcome, this position was either maintained or improved still further across the two years of the scaling up project.

Specific mention should be made of a number of particularly successful QI interventions:

- Use of standardised surgical care (surgical care bundle) doubled over the two years
- Prompt admission to an appropriate ward also improved substantially
- Rates of pre-op. and peri-op. orthogeriatrician assessment improved to exceptional levels
- Prompt post-op. mobilisation was followed by improving rates of daily rehabilitation
- Nutritional support allowed 40% of patients to receive an additional meal each day.

These are all key components of the Hip Fracture Programme recommended in CG124 – a model of collaborative multidisciplinary assessment and care that NICE identified to be cost-saving.

Data quality issues in comparator units (both national figures, and those for the Controls sites) mean that it is not possible to define a reduction in length of stay as resulting from the HipQIP scaling up.

The mortality data suggests that the work is on target to achieve the *"100 lives saved"* that was its key objective but this frail population of older people may not share the same objective.

The NHFD's experience is that patients place much less emphasis on survival than on pain control, the quality of their hospital experience, and on whether they actually succeed in returning home.

The HipQIP scaling up work demonstrates its sensitivity to such priorities:

- Prompt relief of pain and fear provided by pre-operative nerve blocks will have contributed to the very positive results of the patient experience questionnaires
- Rates of return home improved from 50% to 56.9% across the two year period – meaning that an extra 119 patients a year returned home compared to before the scaling up project

This last finding provides the best possible proof of the impact of this QI initiative, which successfully integrated the improved standardised care of well-coordinated Hip Fracture Programmes in the four HipQIP sites, with the individualised attention that is so vital to these very frail patients.

Section 1 HipQIP indicators

This section describes measures specifically collected by the HipQIP sites as measures of their success in specific QI priorities. These measures are not available in other units across the NHFD.

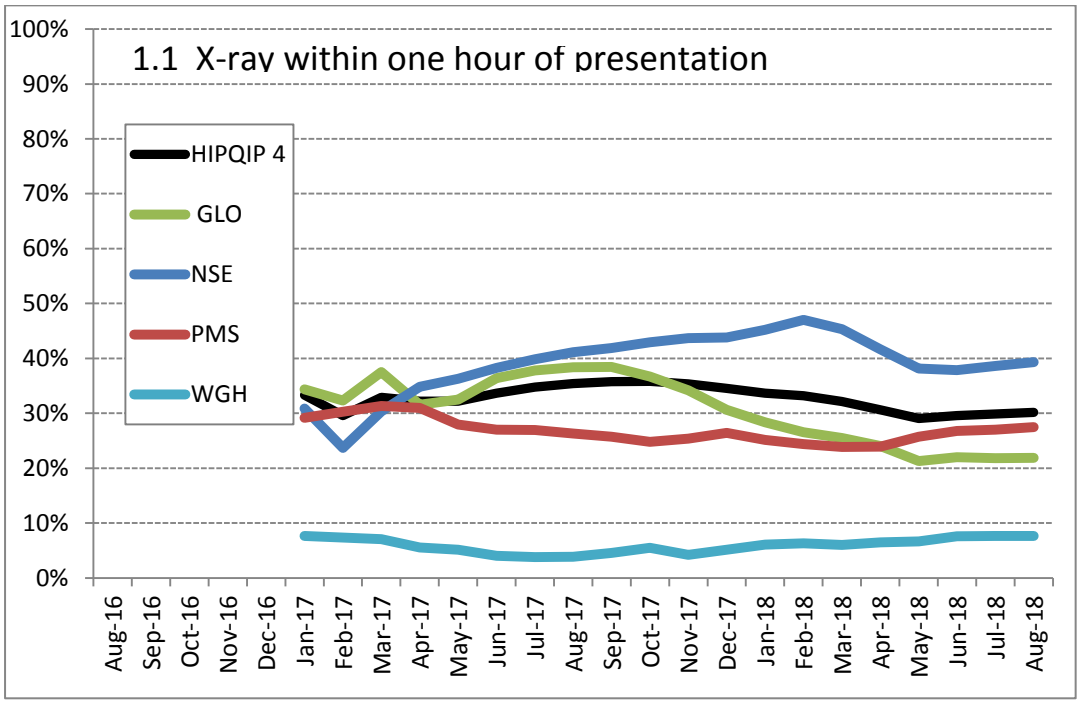
1.1 X-ray within one hour of arrival

Rationale

A prompt diagnosis of hip fracture means that delays in administration of analgesia, admission to an appropriate ward setting and optimisation and scheduling for surgery can be avoided. The Royal College of Emergency Medicine recommend that all patients should be x-rayed within one hour of arrival in the emergency department.

Findings

Except in NSE there is no real suggestion of improvement in this respect, perhaps reflecting that this is dependent on Emergency Unit teams and it may not be easy for HipQIP teams based in trauma units to influence care prior to their own involvement with each patient.



Context

The apparent lack of improvement in the participating Trusts is a reflection of the considerable pressures faced by Emergency departments (ED) during the project and the difficulties mentioned above of influencing care prior to direct patient contact. All of the Trusts faced similar difficulties and acknowledged that although caring for people with a fractured neck of femur constituted a considerable proportion of emergency department work, so too did other conditions such as cardio-vascular incidents and sepsis.

In WGH, although prompt X-ray was a 'priority' of the collaborative, local difficulties such as a shortage of senior medical staff meant that the ED was closed overnight following a CQC visit. The team therefore took the decision not to focus on this outcome early in the project, as there were many other competing priorities which were felt to be more important to address.

In the other Trusts there was an acknowledgement that the lack of improvement in this outcome although disappointing, was unavoidable due to the pressures faced across the NHS by emergency departments.

1.2 Consideration for Critical care

Rationale

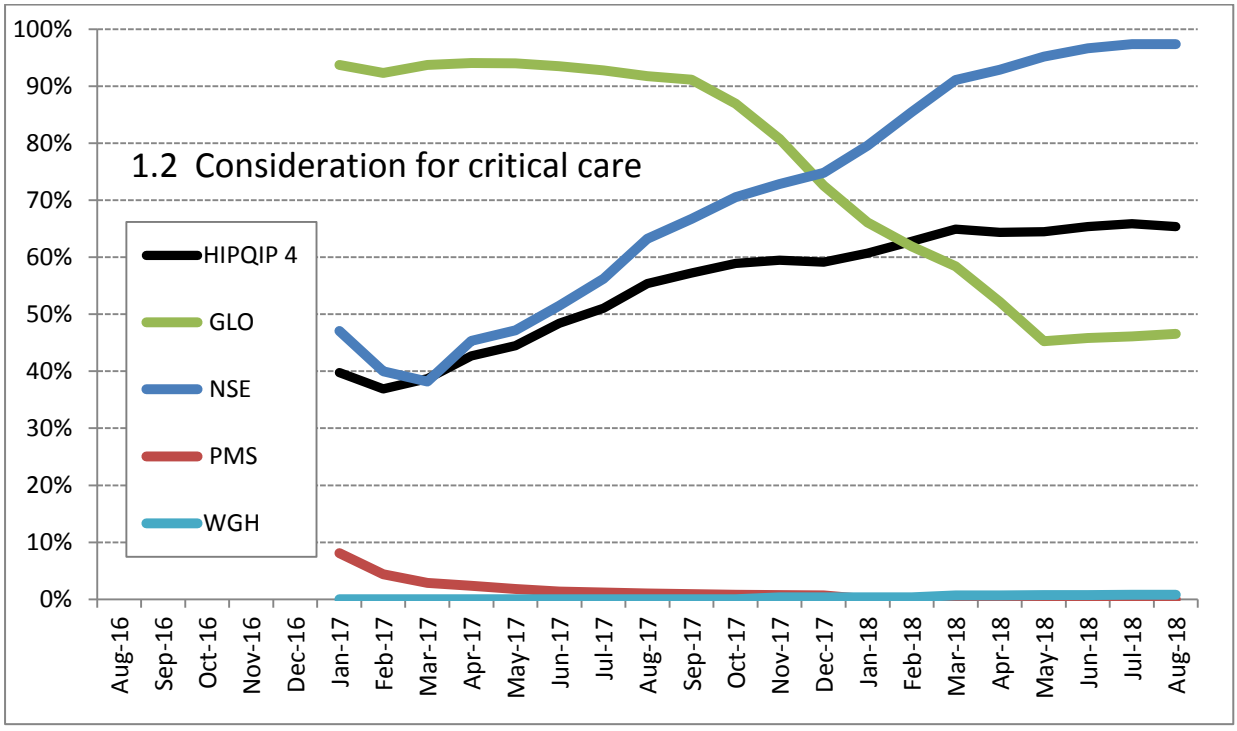
Despite improving outcome of hip fracture, 25% of UK patients still die in the year after the injury.

Surgery is key to ensuring the dignity and independence in this very frail population, but this does not automatically mean that other invasive interventions would be appropriate if life threatening medical or surgical complications arise. These decisions are complex and require careful discussion between surgical, orthogeriatric and critical care teams if the patient and their family are to be supported to understand questions over escalation of care and resuscitation.

Findings

By the end of HipQIP project nearly 100% of patients in NSE had clear documentation by senior staff of a treatment escalation plan and ceiling of care completed within 48 hours of admission.

GLO levels declined but were maintained at just under 50% in the last quarter of the programme. Data were not provided for the other units.



Context

In WGH, although this outcome was a 'priority' of the collaborative, the team took the decision not to focus on consideration for critical care as one of their priorities, as there were other aspects of care which they felt were an even greater priority, thus no data was entered. The apparent decline in GLO performance in relation to this outcome, from the summer of 2017 can be explained as a failure of data entry, which coincided with the reconfiguration of orthopaedic services in Gloucester and Cheltenham onto the Gloucester site. This meant that the number of cases virtually doubled, however the hours for data entry were not increased and in fact were reduced slightly. The focus then had to be on data entry for the NHFD and therefore the HipQIP data entry suffered. However, every patient with a hip fracture is considered for critical care as part of the ceiling of treatment assessment, which is completed.

In PMS every patient is considered for critical care as part of the anaesthetic surgical care bundle and therefore this also appears to be a failure of data entry rather than a failure of performance and documentation is available to verify this.

1.3 Use of Surgical care bundle

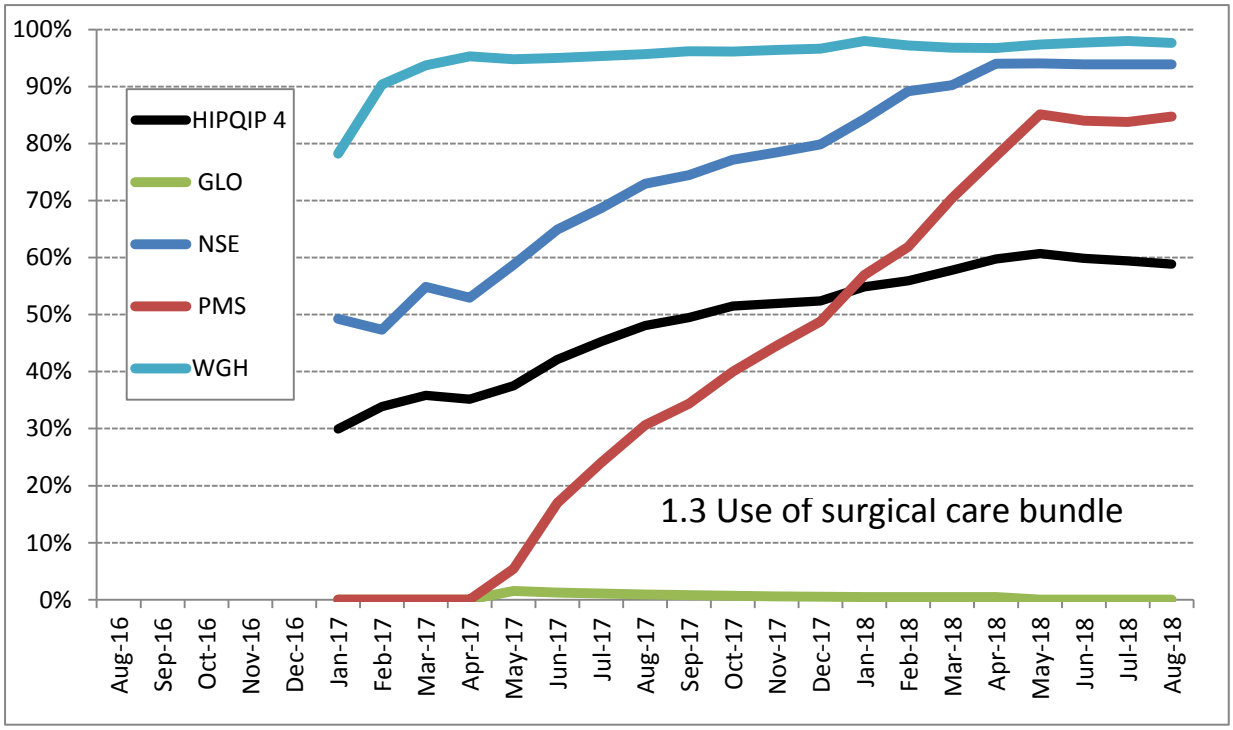
Rationale

Despite the complexity of hip fracture patient' medical, surgical and psychosocial problems, many aspects of hip fracture care are amenable to a standardised approach. This raises the quality of routine care, and helps to identify patients in whom a more individualised approach is necessary.

Northumbria's experience with implementing a range of improvements in surgical care translated into a surgical care QI bundle (see Appendix B), and experience in the development of the approaches was regularly shared across the collaborative.

Findings

Use of a surgical care bundle doubled (from 30% to 60%) across the HipQIP collaborative, with well over 90% of patients in NSE and WGH receiving this form of standardised care.



Context

A great deal of work was undertaken in PMS, WGH and NSE to agree an appropriate protocol and to introduce a surgical care bundle, which the teams saw as a great success.

In GLO surgical care bundles had never been used and were not seen as an immediate priority within the HipQIP project. As part of the sharing of good practice that has taken place within the collaborative, a protocol has now been agreed and introduced within the trauma unit.

1.4 Use of Vasopressor support

Rationale

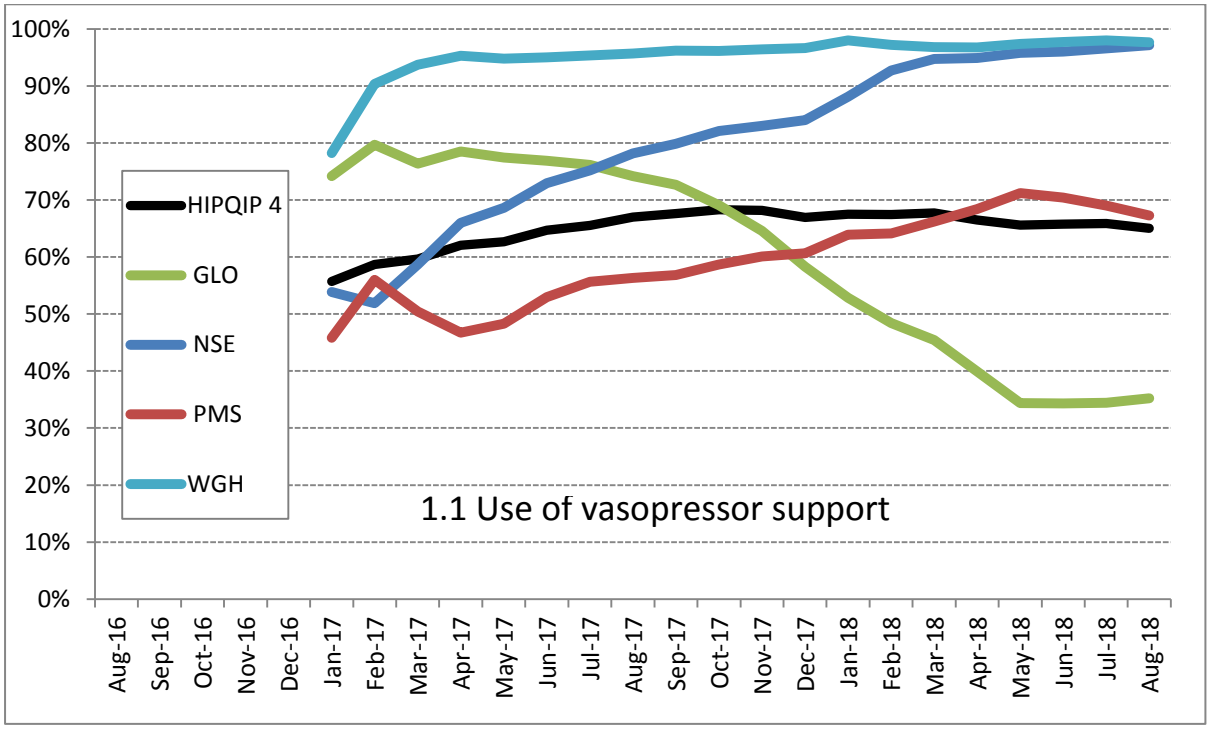
Low blood pressure in theatre is associated with higher mortality (ASAP3, White *et al. Anaesthesia* 2016) and hypotension in the peri-operative period affects the function of organs which are sensitive to poor perfusion which particularly lead to acute kidney injury and delirium.

Fracture site and surgical blood loss play a part in this, so that optimisation of blood and fluid resuscitation is important in the pre-operative, pre-operative and post-operative period. However, it is also logical to consider the use of vasopressors to specifically counter the vasodilator effect of spinal or general anaesthesia.

Findings

As a collaborative, vasopressor therapy increased slightly over the period from 56% to 65%.

GLO recorded a trend away from this form of management over the period. This may either reflect problems with data collection, or a local belief that the benefits of this approach for clinical outcomes are as yet unproven.



Context

The apparent decline in this outcome at GLO reflects, as correctly assumed above, the issue with data collection already mentioned in 1.3. The loss of hours available to input data for the patients previously treated on the Cheltenham site (when their numbers are included in the database) appears as a decrease in the use of vasopressors. In part this was also a peculiarity in the database structure as without the appropriate data it is recorded as a 'NO'. In fact all patients who require such support receive vasopressor support when needed, in the form of Metaraminol.

1.5 Daily Mobilisation

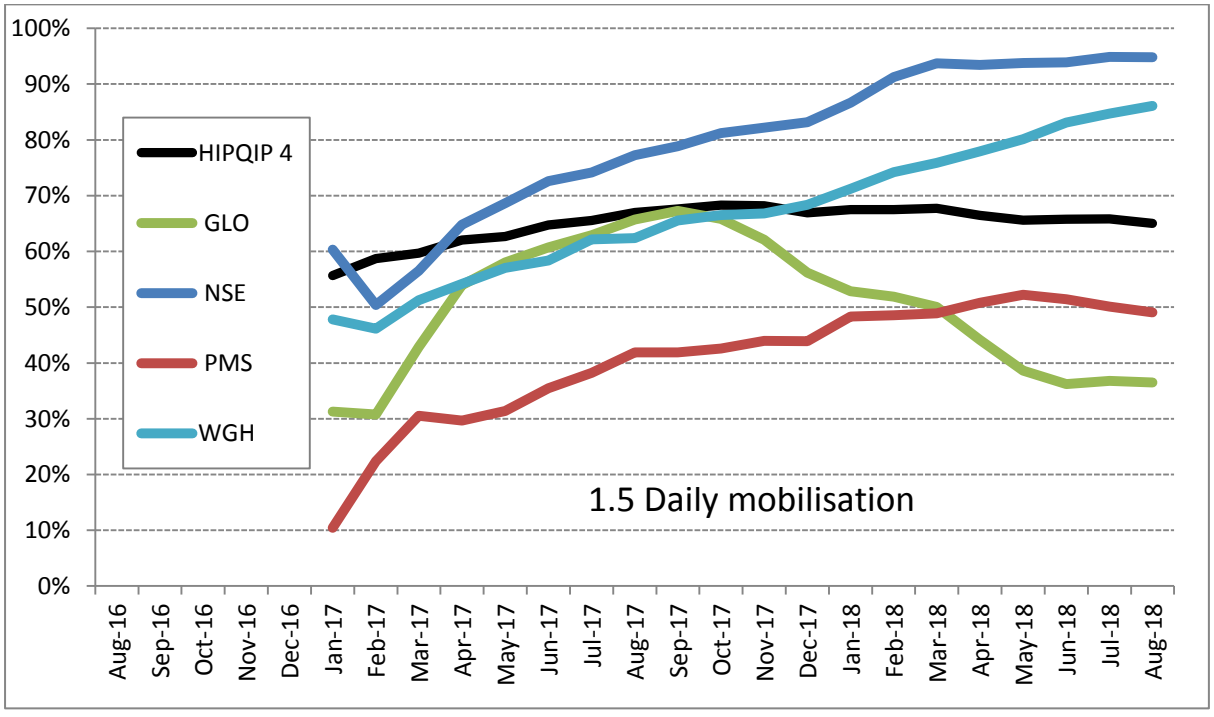
Rationale

NICE recommend *"Adults with hip fracture start rehabilitation at least once a day, no later than the day after* surgery*"*.

While mobilisation is only part of a rehabilitation package, this is a critical component of a patient's recovery and is likely to result in shorter length of stay and better outcomes.

Findings

The Collaborative reported impressive improvements against this indicator, except GLO where these failed to be sustained, so that overall figure improved from 55% to 65%.



Context

The results for GLO again reflect the issues with data collection and entry, which not only involved the reduction of hours available for data entry but also the lack of appropriate hardware for live capture of daily mobilisation during weekends.

WGH in particular made huge strides in achieving this outcome. Initially early mobilisation relied wholly on the availability of therapy staff, but by the end of the project, nursing staff also assisted with achieving this aim as they acknowledged the benefit to both patients and staff. The therapy team also initiated ward based exercise classes and a breakfast club, which had had a significant impact on improving mobility and patient wellbeing.

> "*I first came 4 years ago and there was a sort of unwritten rule that therapists had to get patients out of bed on the first occasion, so if we were busy we may not have got to the patient until late in the afternoon or at weekends until the second or third day. Since HipQIP we've come to work together a lot better so I've done a lot of teaching around day zero and helping people to see that it is everyone's responsibility to deliver the best care for the patient. We've also recruited more therapy. So the culture around who gets patients out of bed has really changed and capturing that data has helped hugely in that by being able to emphasise the good work* people *are doing. Also I think being part of that wider collaborative I mean one of the physios in another team spoke about exercise classes they were doing so I thought right I'm going to do that. So we now have a weekly exercise class, which lasts between 30 and 45 minutes for 4 to 6 patients and they really enjoy it and the breakfast club and tea parties, which also help with mobility. But what these things have also done is help us build a great team with the nursing staff so we'll come along and help with breakfast club and tea-parties and the nurses will also help with early mobilising.*" (WGH)

1.6 Additional Nutrition

Rationale

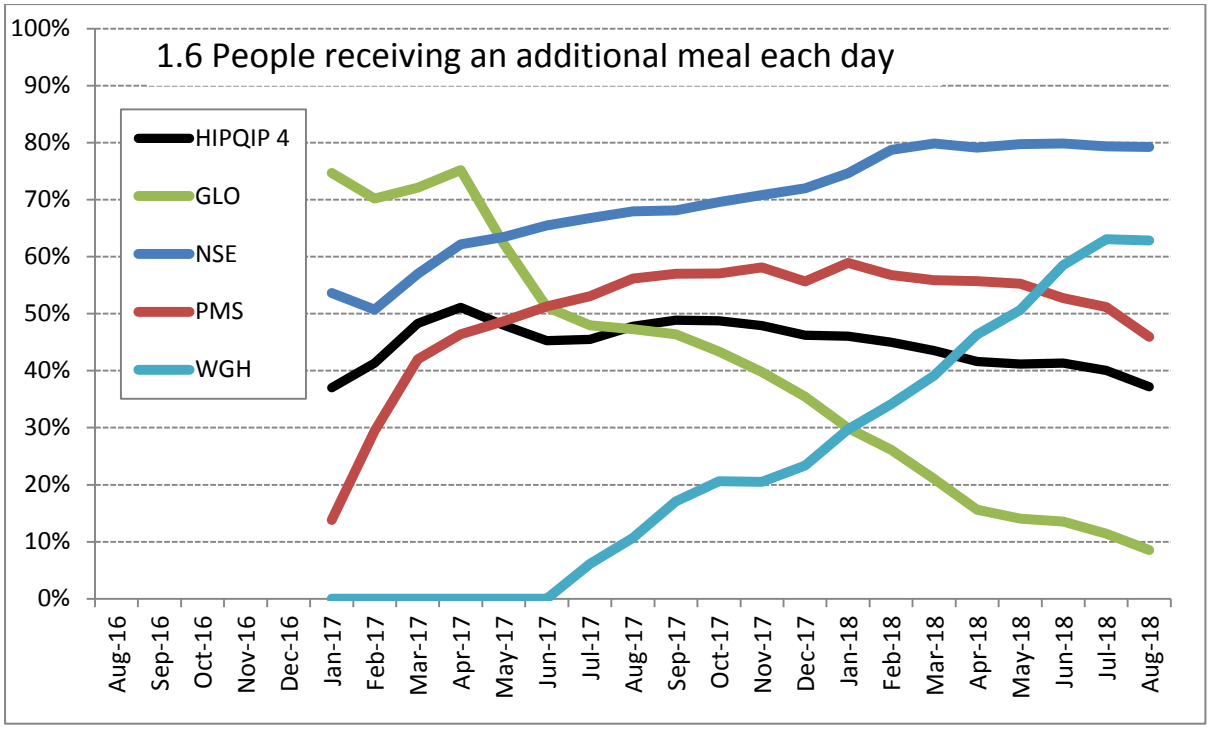
Most people presenting with hip fracture are overtly malnourished or score “at risk” on nutrition risk assessments. Most deaths after hip fracture can be linked to nutrition – either as a reflection of poor food intake, or as a result of swallowing and aspiration issues in some people.

There are strong suggestions that supplementary feeding can improve hip fracture outcome, but this is often challenging as frail and cognitively impaired patients may be reluctant to accept supplements or tube feeding. The provision of personalised support with meals was a key part of the HipQIP strategy.

Findings

Other HipQIP interventions may have already been in place before the start of the scaling up work, but the provision of nutritional support was a new intervention. As a result the figures given in this graph should be considered to show the extent of improvement above a baseline figure of 0%.

The overall picture was impressive with 40% of patients receiving an additional meal each day across their first two weeks in hospital. The success of this varied between units, with GLO failing to sustain initial rates but other units steadily improving.



Context

Providing additional nutrition was a key element of the HipQIP scaling-up programme. This had been introduced a number of years ago in the lead organisation (NSE) and the additional training offered to the collaborative on this aspect had been positively received.

Once again the situation in GLO reflects the problems with data entry encountered after the reconfiguration of orthopaedic services, rather than a failure in patients being given additional nutrition. All hip fracture patients within GLO received additional nutrition and this was viewed as a great success within the project. Initially there was only one nutritional assistant who worked five days per week, which meant that during her days off, not only was data not collected, but patients were not necessarily given the additional nutrition. A successful business case was made for two full-time nutritional assistants to provide full 7-day cover, however following the reconfiguration of services a conscious decision was made not to enter this data as it was seen to be extremely burdensome.

As in all of the trusts involved in the Collaborative, the additional support for nutrition was seen as hugely successful and teams had introduced ward tea-parties, breakfast clubs and increased involvement of family and friends as a result of this intervention. In WGH for instance, the appointment of a dietetic assistant dedicated to working with hip fracture patients had been very successful. The team acknowledged that there were initial teething problems with integration and understanding of the role within the ward team, however these were soon overcome once the staff

recognised the importance of nutrition in this group of patients, so that when the nutritional assistant was away, many aspects of her role such as holding tea parties and undertaking MUST scores were undertaken by other members of the team. Also in other Trusts, substantive funding had now been granted for continuation of the role and Board members had congratulated the project team on the fact that that since the appointment was made, no complaints about feeding patients had been received and MUST scores were consistently recorded in 100% of patients within the trauma ward.

This aspect of the HipQIP project was one of the key successes of the project of which all of the teams were very proud. It was also notable that many of the medical staff commented upon how this element had really surprised them.

> "*The biggest win has been making it okay to talk about nutrition if you like. So almost giving corroboration to the importance of nutrition, so. One of the anaesthetists who isn't involved in the programme at all, came up to me the other day and she was asking about some nutritional elements and I felt more able to discuss it and I would take it a lot more seriously. So I think the nutrition for me has been a big thing. Because again, a lot of the other stuff we were doing, we elected to not do any of the surgical stuff, so yeah. I mean before the programme started, I just wouldn't have paid so much attention to nutrition as a surgeon. I mean the kind of scientist in me knew the importance of it but the process of nutrition, as in getting the process of nutrition into the hip fracture population and the importance of it, is not something that I had - it was low down on my priorities if you like. But it's definitely a lot higher now.*" (SCM)

Section 2 Patient Experience

Rationale

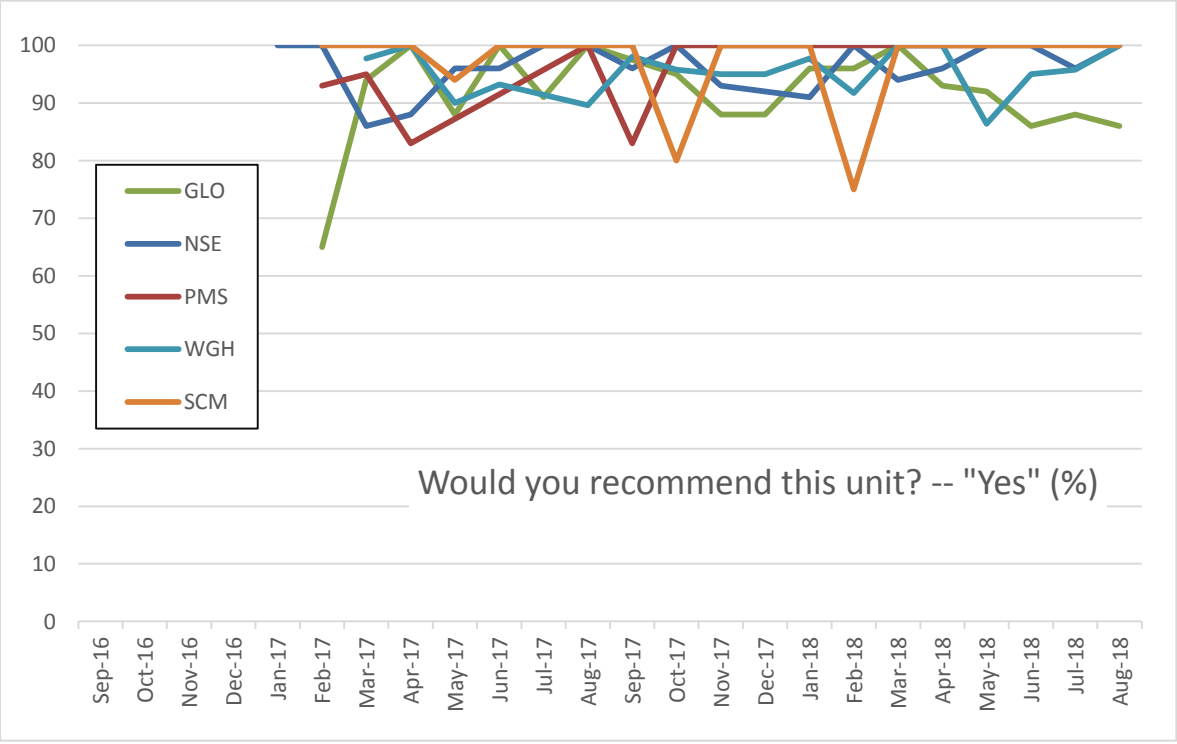
Patient experience data was collected on a sample of patients each month at each site and aggregated summary data submitted to RCP for inclusion in the analysis.

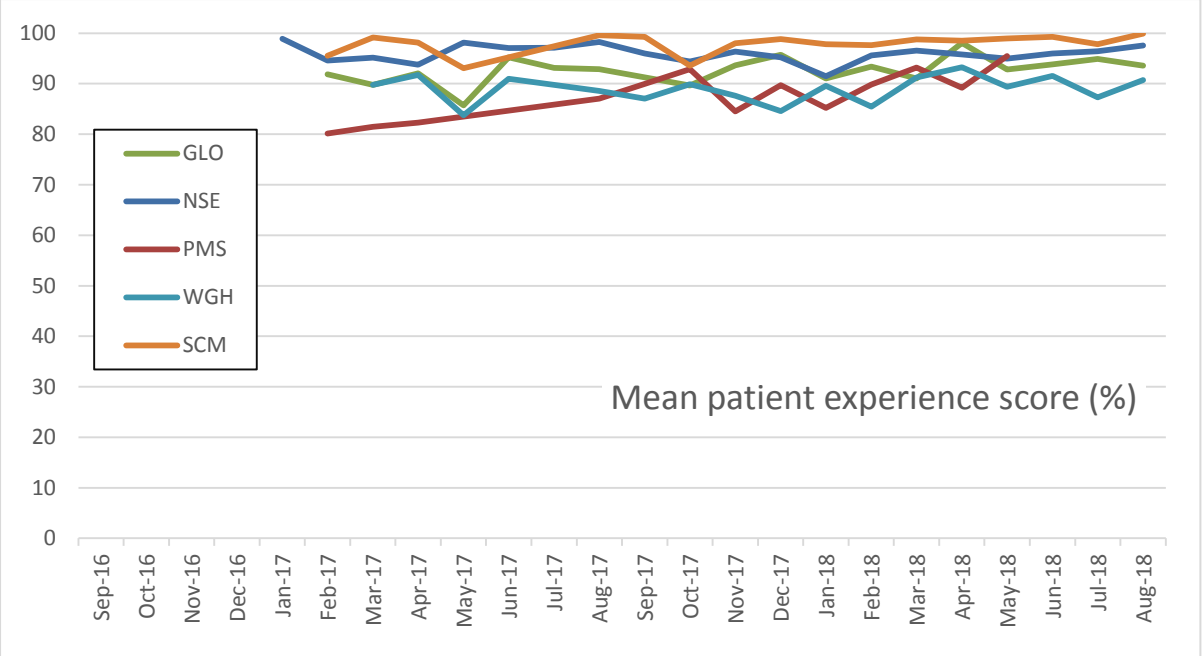
The charts tracked monthly submissions for the duration of the project. Three indicators of patient experience were used:

- Average patient experience score
- Percentage of domains scored as *"better than 9 out of 10"*
- Percentage responding positively to the *"would you recommend this unit?"* question.

Findings

Across the sites, very high percentages of patients indicated that they would recommend the unit which is a very positive reflection of their own experience.



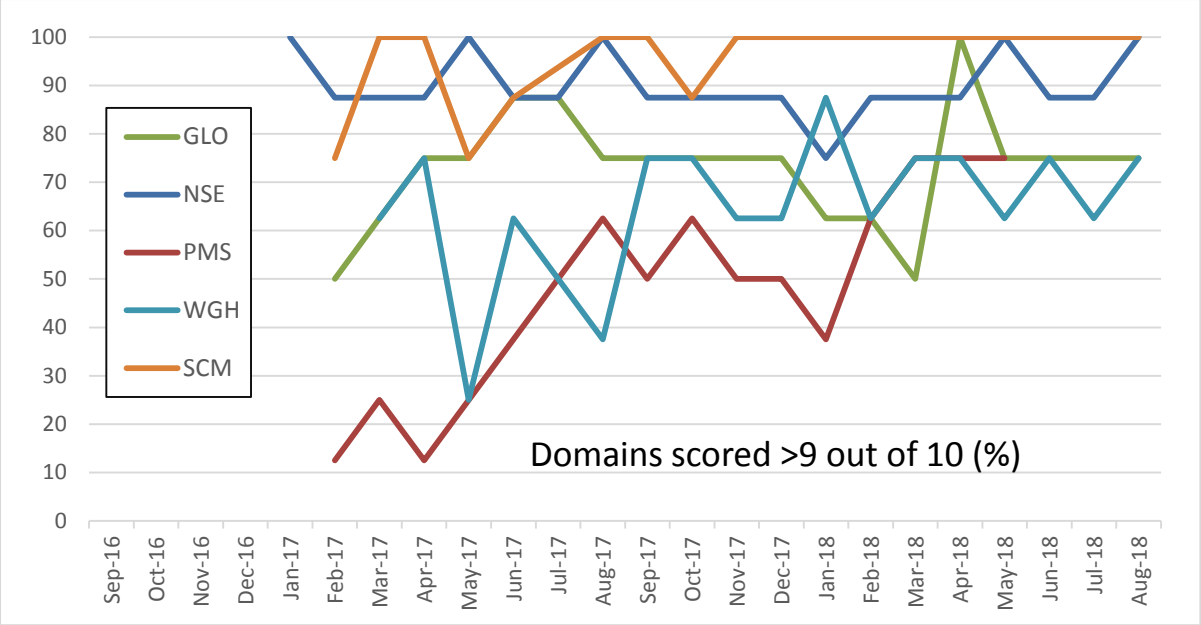


The second chart shows the mean patient experience scores across a series of care domains, but it also proved to lack discrimination in defining improvement as all these scores were also very positive.

The HipQIP Collaborative therefore set itself a more challenging target:

> *Such exceptional quality of care that patients rate would their experience as "better than 9 out of 10" across all domains of their experience*

The final chart shows how this improved across the study period – with the percentage of all domains scoring as *"better than 9 out of 10"* improving from 45% to levels of >75% by the end of the project.



Context

Initially a number of Trusts struggled in collecting this data as it was new, time consuming and funding for data collection was not available in many Trusts, so this had frequently fallen onto one individual or had had to rely on volunteers. All of the Trusts agreed that when done, this provided useful feedback to ward staff and the project team, especially in highlighting areas for focus.

NSE had collected patient experience data for a number of years and the additional training that they had offered to the collaborative on collecting patient experience data had been very positively received. There were some regrets by one of the project leads who felt that in hindsight they should have been more explicit about measurement at the start of the project:

> *"But I wish we'd been more explicit in the very beginning, particularly around patient experience measurement and the manner in which certain things had to be done. I think going out and saying "Well it doesn't really matter how you do that, find your own solutions" you pay the price when it's then not done in a way that delivers it."*
> (NSE)

In WGH, the project lead had initially collected the data and found it particularly onerous especially in providing timely feedback to the ward staff. This improved towards the end of the project as patient advocates volunteered to collect the data so that the project manager could focus on timely analysis and feedback of the results. The team recognised the empowering effect of collecting and feeding back this data and hoped to focus on this aspect in future months.

In SCM, detailed patient experience data had not previously been collected and they were fortunate that the Trust audit team assisted by collecting and analysing this data, rather than having to rely on

members of the project team or volunteers. The consistency of the feedback had been very motivating as one team member commented:

> *' I think the patient experience I mean, you know, one hundred percent we're hitting a majority of the time and it's been pretty consistent to be fair, so I think having the team come in and do the patient experience has been a huge advantage. It's good to see because you share it with the staff and then obviously it gets shared with senior managers, and then that's a good morale boost for the staff'.* (SCM)

Section 3 National performance indicators

This section incudes measures that are widely collected as part of the NHFD's work. This allows the performance of the HipQIP Collaborative to be compared to national figures.

Some of the indicators in this section are also plotted against performance data for 16 "Control sites" which are a set of NHFD sites blindly selected so that their combined 30 day mortality was the same as that of the four Collaborative sites in the year prior to start of the HipQIP work in September 2016.

3.1 Best Practice Tariff

Rational

In 2010 the Department of Health introduced a Best Practice Tariff (BPT) which rewards hospitals in England which provide the key elements of a hip fracture programme for each patient.

The elements that make up best practice are:

- surgery within 36 hours of admission
- shared care by surgeon and geriatrician
- admission using a care protocol agreed by geriatrician, surgeon and anaesthetist
- assessment by geriatrician within 72 hours of admission
- pre- and postoperative abbreviated mental test score (AMTS) assessment
- geriatrician-led multidisciplinary rehabilitation
- secondary prevention of falls
- bone health assessment.

In April 2017 a more demanding set of criteria for BPT was introduced by NHS England with three additional requirements:

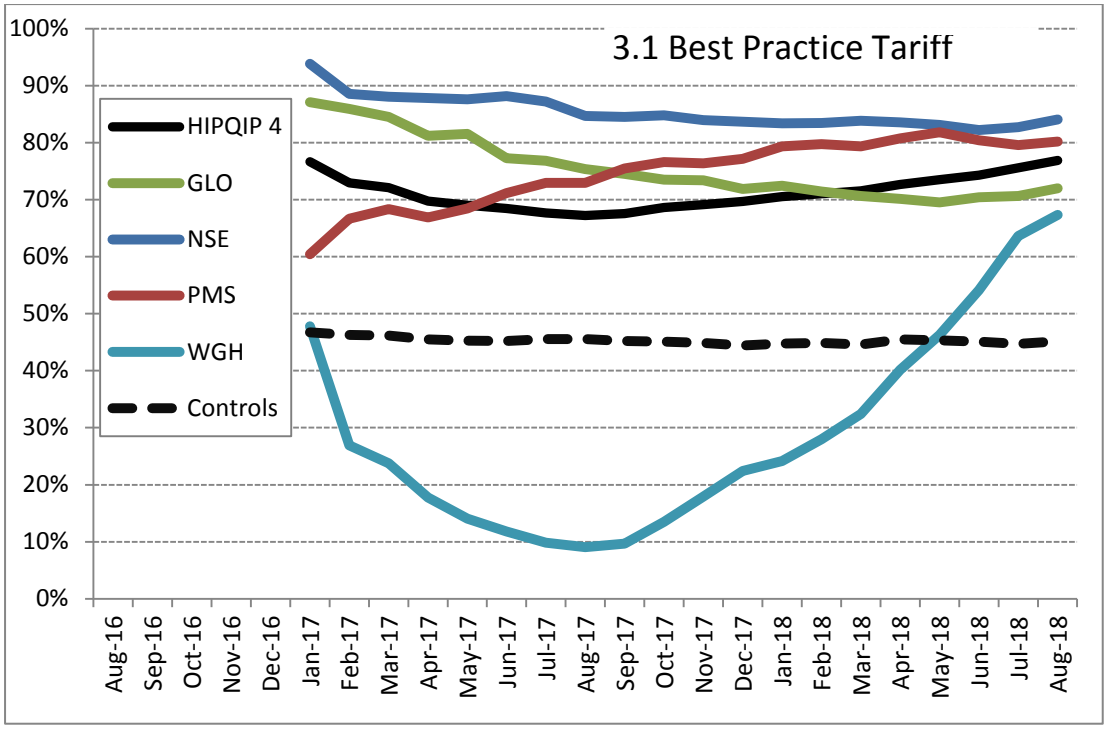
- assessment of nutritional status on admission
- assessment for delirium post-operatively
- physiotherapy assessment post-operatively.

Findings

The NHFD website (www.nhfd.co.uk) reports that during this two year period hospitals in England qualified for BPT on 62% of all cases.

BPT eligibility showed marked variation in WGH, but in spite of this the four units of the HipQIP Collaborative recorded BPT figures that were far better than the national average, at just over 70%.

In contrast the 16 Control hospitals achieved BPT in only a minority (45%) of cases, a figure that showed no evidence of improvement over the time course of the scaling up intervention.



Context

This graph demonstrates the significant difficulties experienced by WGH in the first part of the HipQIP project. The serious illness affecting the project clinical lead together with the inadequate rating of the Accident and Emergency department due to a lack of senior medical staff, which resulted in overnight closure from July 2017, had been very demotivating for all staff. Since that low-point however, the team have made huge strides in improving performance and the team acknowledge that in no small part this has come from being part of the HipQIP collaborative, which has enabled them to make considerable gains in a number of areas.

3.2 Pre-operative nerve blocks

Rationale

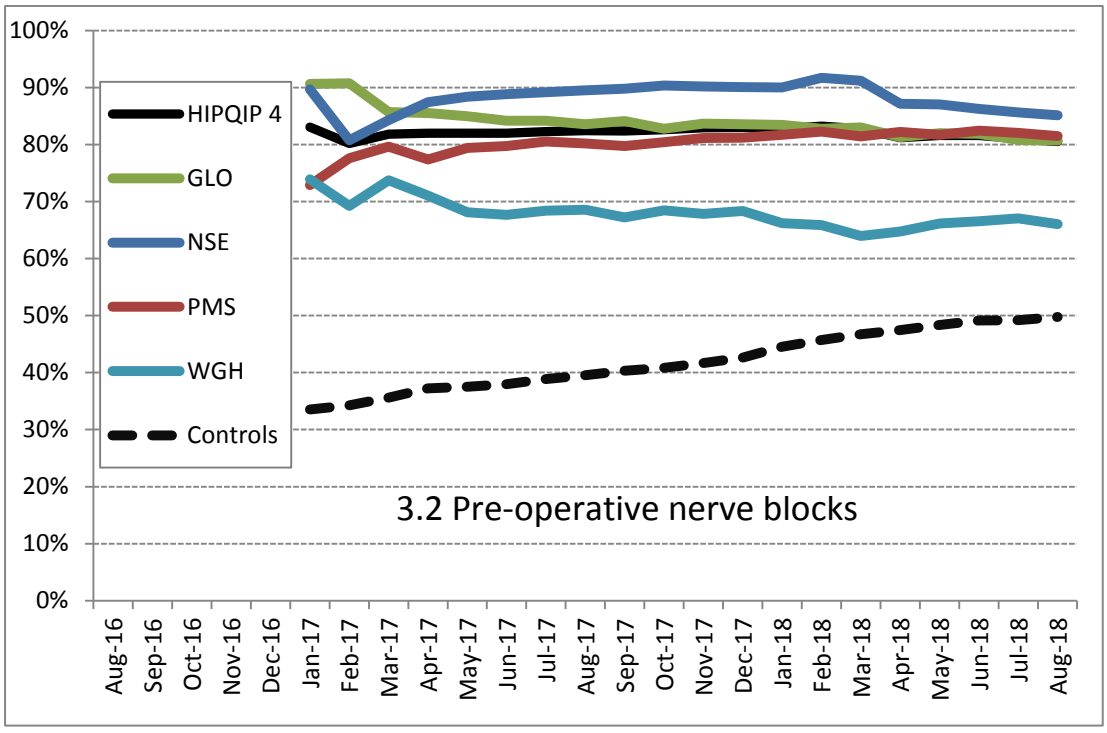
NICE guidance (CG124) recommends that clinical teams should *"consider adding nerve blocks if paracetamol and opioids do not provide sufficient preoperative pain relief, or to limit opioid dosage. Nerve blocks should be administered by trained personnel"*.

Nerve blocks (typically fascia iliaca blocks) given by clinicians in the Emergency Unit or orthopaedic ward are increasingly used to relieve pain until definitive surgical fixation or an arthroplasty can be performed.

Findings

The NHFD website (www.nhfd.co.uk) reports that during this two year period, hospitals in England showed steady improvement in provision of pre-operative nerve blocks. The national figure rising from a third to a half of cases. The same pattern was seen for the 16 Control hospitals.

In contrast, NSE, GLO, WGH and PMS were all performing well above this figure from the beginning of the project, and maintained a figure of >80% across the whole period of the two year period.



3.3 Prompt admission to an orthopaedic or orthogeriatric ward

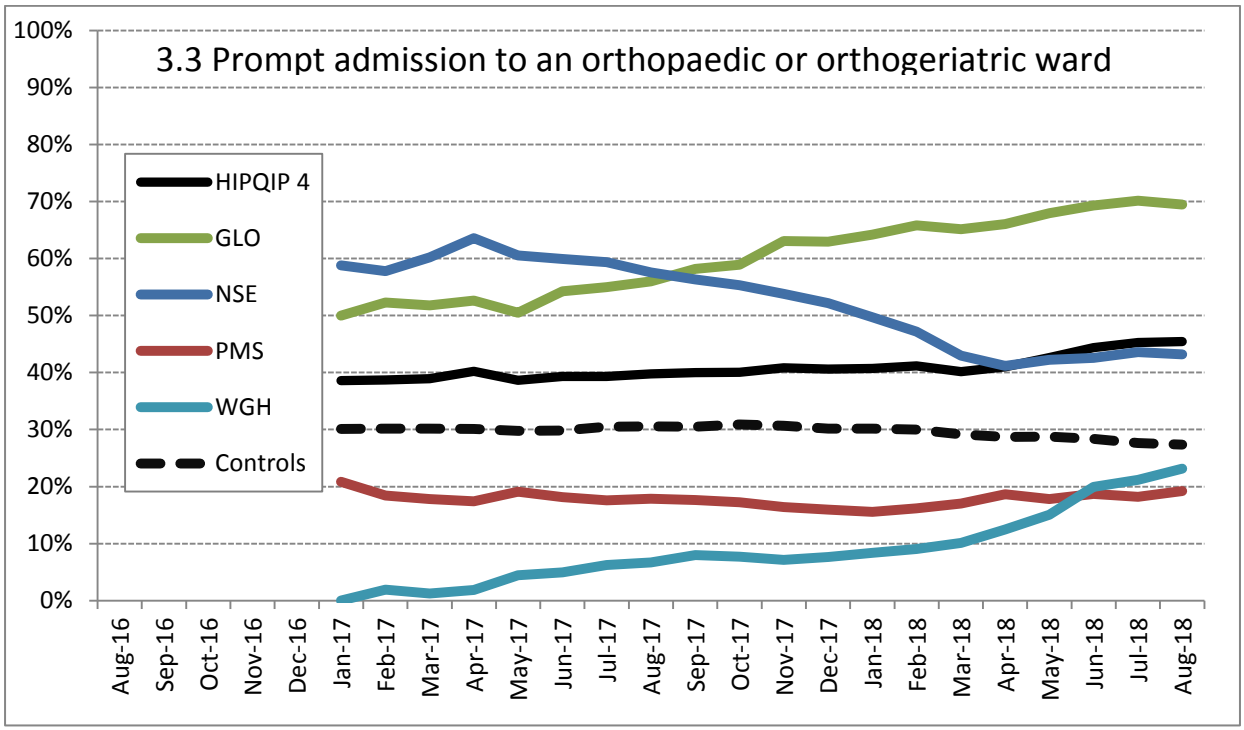
Rationale

Prompt admission to an orthopaedic or orthogeriatric ward was central to the recommendations of the BOA and British Geriatrics Society's 'Blue Book' and remains a key tenet of NICE guidance (CG124).

It is accepted that a minority of patients (eg. patients with renal failure or stroke) are sometimes better managed in another specialist unit, but the majority of patients would benefit from care by a Hip Fracture Programme throughout their time in hospital.

Findings

The NHFD website (www.nhfd.co.uk) reports that across England 40%, of patients were admitted to an orthopaedic or orthogeriatric ward within 4 hours of presentation. The same figure was achieved in the four units of the Collaborative, though this figure was just 30% across the 16 Control hospitals.



Context

Both WGH and PMS have experienced difficulties in ensuring patients are admitted to orthopaedic or ortho-geriatric wards, largely due to the shortage of specialist beds. WGH has improved

performance on this measure while PMS still experiences difficulties although they do meet the target for admission to a ward.

3.4a Assessment by an orthogeriatrician peri-operatively

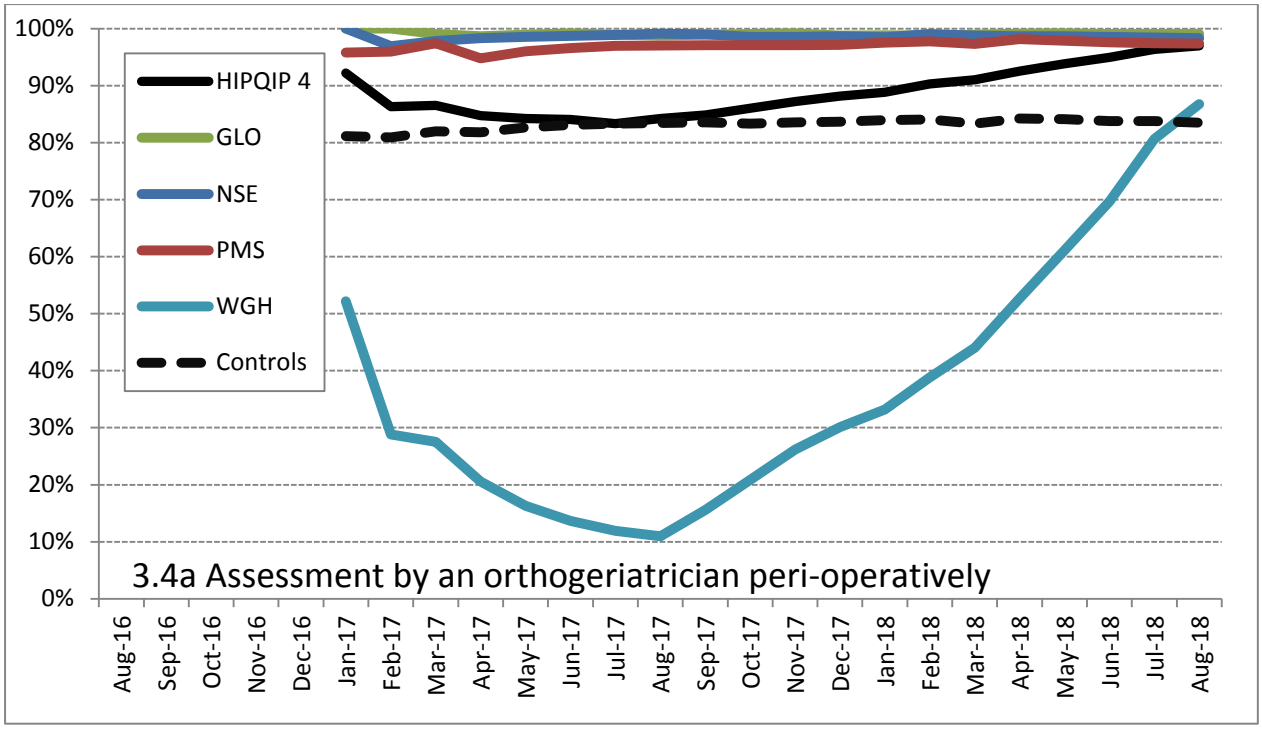
Rationale

A geriatrician is a doctor who specialises in treating the complex problems of frail and older patients. The NHFD has encouraged hospitals to appoint 'orthogeriatricians' who are specialists in the care of people when they are admitted with hip fractures and other orthopaedic problems. These doctors help to make sure that patients are as fit as possible before their operation, support them following surgery and lead the multidisciplinary rehabilitation team. NICE guidance recommends that patients should be assessed by a geriatrician early in their hospital stay.

A formal collaborative relationship between the orthopaedic and orthogeriatric teams is a fundamental part of the Hip Fracture Programmes that NICE recommends. Other physicians may be asked to contribute to the management of new medical concerns or coexisting disease, but it is the orthogeriatrician's experience of supporting frail and older people through the perioperative and rehabilitative periods that allows them to make a real difference to the quality of care.

Findings

Peri-operative assessment (within 72 hours of admission) is incentivised as part of BPT in England and has contributed to very high (>90%) national compliance against this indicator.
Despite a dramatic initial deterioration in WGH the Collaborative hospitals maintained a figure of 90% across the whole period, with a figure of 97% by the end of the scaling up period. This figure was closer to 80% in the 16 Control units.



Context

The loss of their ortho-geriatrician in the early part of 2017 severely impacted on WGH being able to meet this target and despite countless attempts to recruit a suitably qualified person, the post remained unfilled until the end of 2017, when a locum was recruited. Although very grateful for this appointment, the project team have expressed concerns that they are not certain how long this situation will continue.

3.4b Assessment by an orthogeriatrician pre-operatively

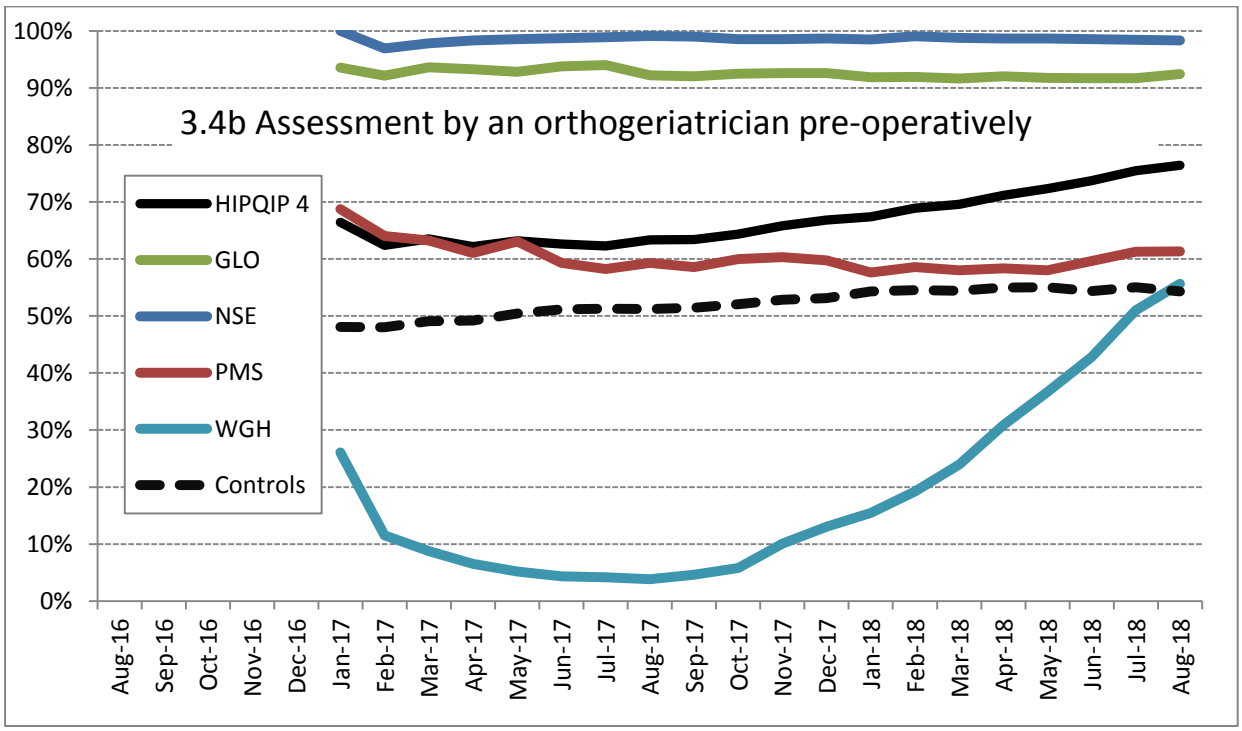
Rationale

Pre-operative assessment by an orthogeriatrician can address acute and chronic co-morbidities and ensure that surgery and rehabilitation is not delayed. NICE recommend admission into an orthogeriatrician led hip fracture programme from admission and a number of such models of care exist nationally.

Findings

A national figure is not routinely reported by the NHFD, but the 16 Control hospitals recorded a figure that rose from 48% to 54%.

WGH's performance declined before improving in the second half of the programme, and PMS declined almost 10% since the start of the collaborative. However, over the period of the scaling up project the overall figure for the Collaborative rose to over 75%.



Context

This reflects the situation already described in 3.4a above.

3.5 Non operative management

Rationale

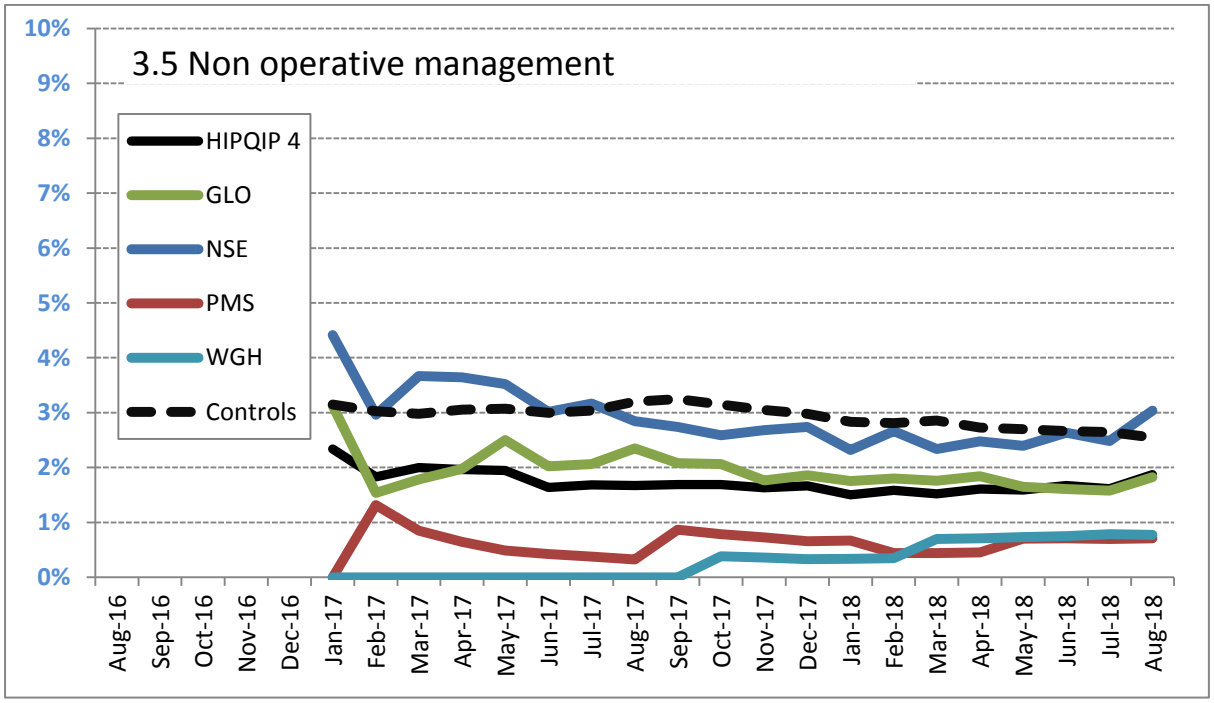
The success of modern orthopaedic and anaesthetic care means that non-operative treatment is now rarely seen in developed countries. Even people who are not expected to survive for more than a few days will benefit from the reduction in pain and discomfort achieved by hip fracture surgery.

Findings

Nationally the rate of non-operative treatment is 2% and reflects a few patients with a fracture that is stable enough to heal unaided, and others who die before surgery, or are too acutely unwell to cope with any operative intervention.

Rates of non-operative treatment vary across the Collaborative sites, with NSE and GLO showing a steady improvement in initially slightly higher figures. As a result non-operative management was seen in less than 2% of patients in the collaborative by the end of the scaling up work.

The 16 Control sites reported a figure close to 3%. Since mortality is very high in people who are not offered surgical care this may be one factor contributing to above average mortality in these units.



3.6 Prompt surgery

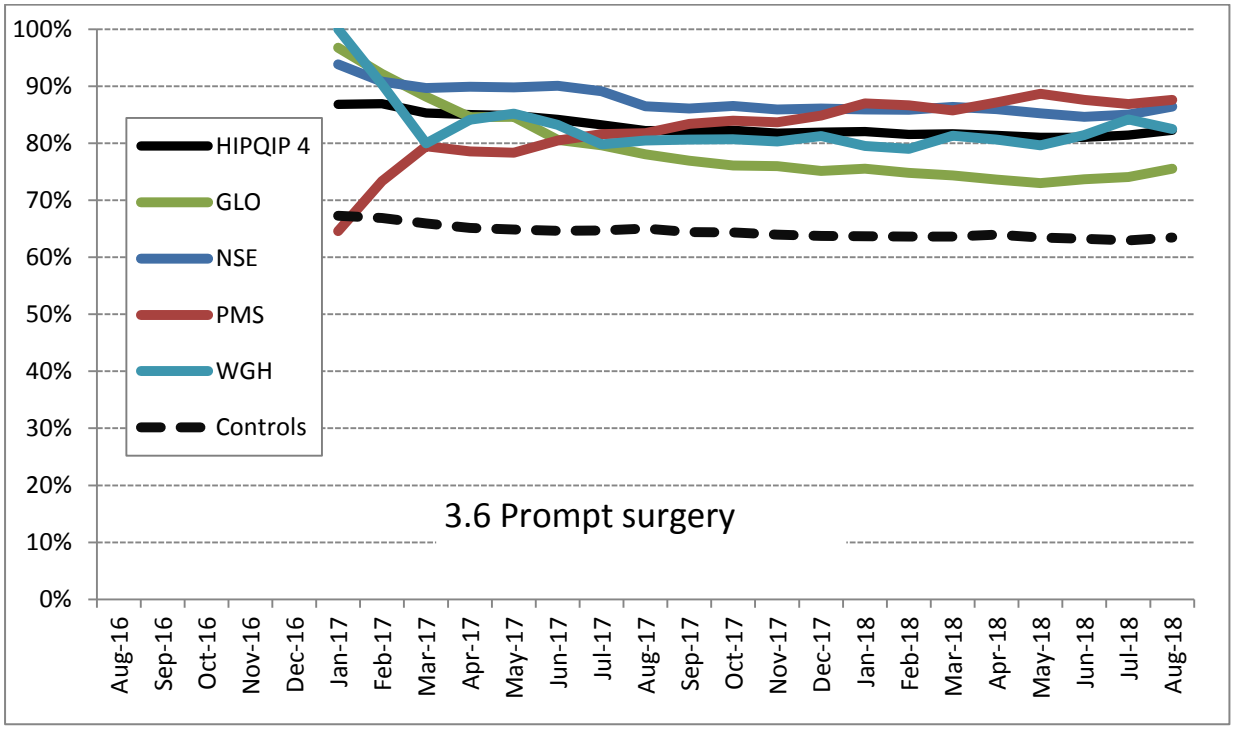
Rationale

NICE guidelines recommend that surgery should take place on the day of, or the day following admission, to hospital. It is uncomfortable, undignified and distressing to be confined to bed with a hip fracture and patients are unable to get up out of bed until they have had the operation. Prompt surgery is an early marker of a patient's progress on the pathway to recovery, and some poorly performing hospitals achieve it for less than half of patients, and it is likely that these units lack a functional hip fracture programme in which the multidisciplinary team can rapidly optimise care and operate on the patient. Theatre capacity must be adequate to allow prompt surgery, even when there are fluctuations in hip fracture numbers or competing demands for theatre time.

Findings

The NHFD website (www.nhfd.co.uk) reports that across England, 70% of patients receive surgery by the day after presentation.

The four Collaborative sites all achieved figures of >80% across the scaling up period, while the 16 matched Controls only reported figures of around 65%.



3.7 Prompt mobilisation

Rationale

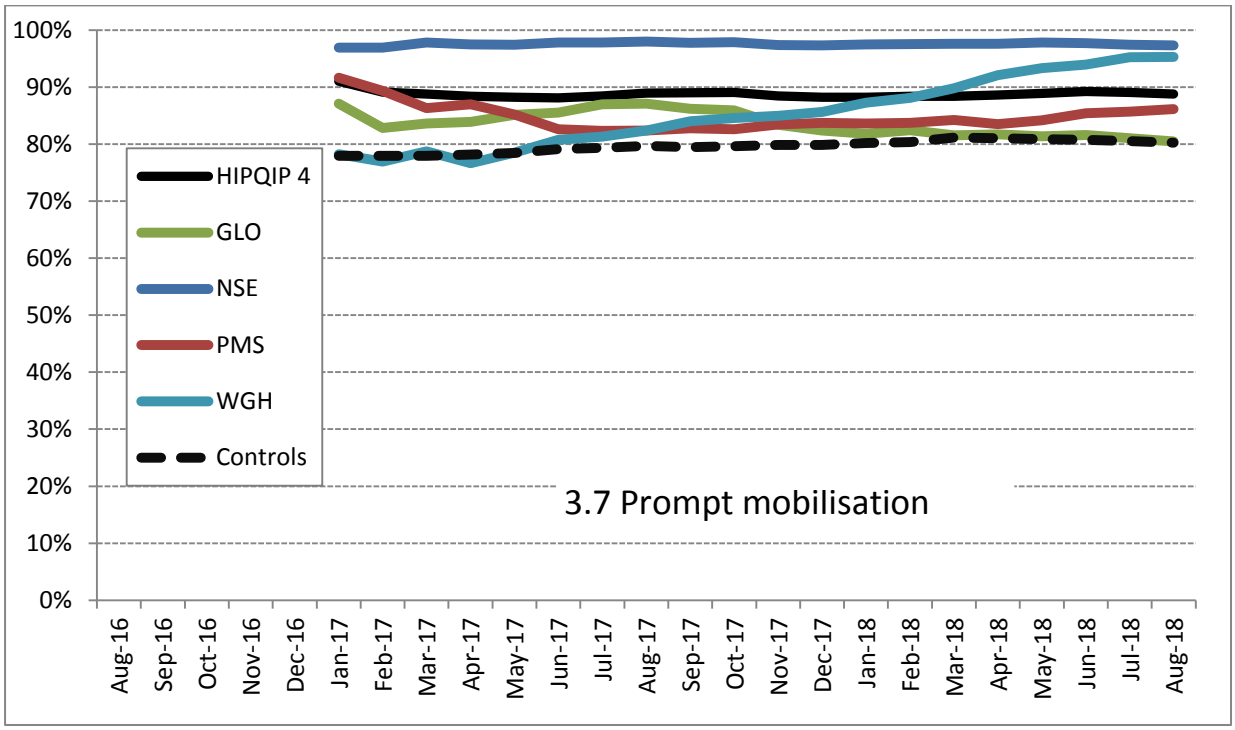
NICE (QS16) recommends that *"Adults with hip* fracture *start rehabilitation at least once a day, no later than the day after surgery".*

Much attention has focused on prompt surgery for patients with hip fracture, but the purpose of this is to relieve pain and restore mobility, so NHFD monitors whether patients get out of bed by the day after surgery. Mobilisation depends on more than the availability of physiotherapists; it also requires effective multidisciplinary working to optimise post-operative protocols for pain control, fluid resuscitation and blood transfusion.

Findings

The NHFD website (www.nhfd.co.uk) reports that across England 80% of patients were mobilised by the day after surgery, and this figure was seen in the 16 Control hospitals.

The Collaborative achieved a figure of very close to 90% across the whole scaling up period.



Context

As highlighted in 1.5 above, all of the teams were successful in implementing this aspect of the HipQIP programme. The therapists shared a great deal of information across the collaborative such as the exercise classes, breakfast clubs, mobility charts and this type of networking and sharing was seen as a great advantage of the collaborative approach.

Section 4 Outcome indicators

This section describes patterns of outcome across the Collaborative sites, and where possible sets these against national figures from the NHFD, and figures for the 16 Controls sites.

4.1 Pressure ulcer incidence

Rationale

Immobility after a hip fracture places huge stresses on the skin of frail patients and is another reason why early surgery and mobilisation are vital. All patients must be considered for appropriate pressure-relieving mattresses, seating and footwear, and to ensure that they are offered appropriate help with drinks, meals, bladder and bowel care, and repositioning in the bed. The NHFD's approach to collection of data on pressure ulcers seeks to encourage routine assessment of pressure sore risk.

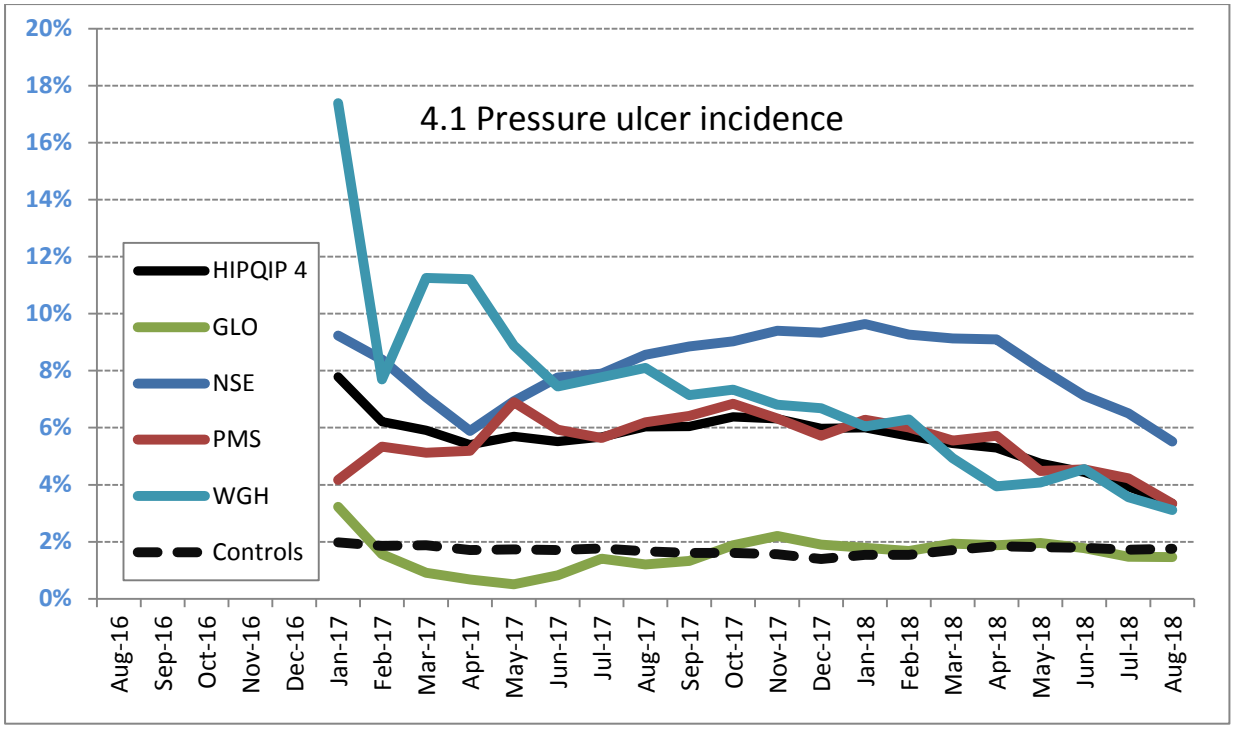
Findings

Nationally, pressure ulcer incidence is around 2.5%, but significant variation results from a combination of quality of pressure ulcer prevention and the effectiveness of surveillance and data reporting.

It is likely that the scaling up programme brought additional attention to patient assessment and accurate recording of data, and that this explains the observation that the Collaborative sites all recorded baseline rates above the figure that was seen nationally and was reported for the 16 Control sites.

However, the Collaborative recorded a decline from 7.8% to 3.3% by the end of the programme and this trend in accurately recorded incidence should be given more emphasis than comparisons with other units which might not be taking pressure ulcer surveillance so seriously.

As a result of such factors the NHFD has now moved to a different approach (www.nhfd.co.uk) whereby reporting whether patients are documented not to have developed a pressure ulcer, so as to capture both failure of surveillance and failure of pressure ulcer prevention.


4.1 Pressure ulcer incidence
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
HIPQIP 4
GLO
NSE
PMS
WGH
Controls
Aug-16
Sep-16
Oct-16
Nov-16
Dec-16
Jan-17
Feb-17
Mar-17
Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
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Jul-18
Aug-18

4.2 Length of stay

Rationale

It is difficult to predict how well patients will cope with the stresses of a hip fracture, surgery and anaesthesia, and with the challenges of rehabilitation.

Some patients are well enough to leave hospital after only 5–7 days, but the time spent in hospital depends on various factors, including previous level of mobility and the support available at home. Frailer people often need increased levels of care after discharge.

Acute length of stay (LOS) is often driven principally by local service configuration, for example in some services an acute ward will routinely transfer all patients to a rehabilitation unit within a few days, while in others rehabilitation may continue in the acute ward setting for far longer.

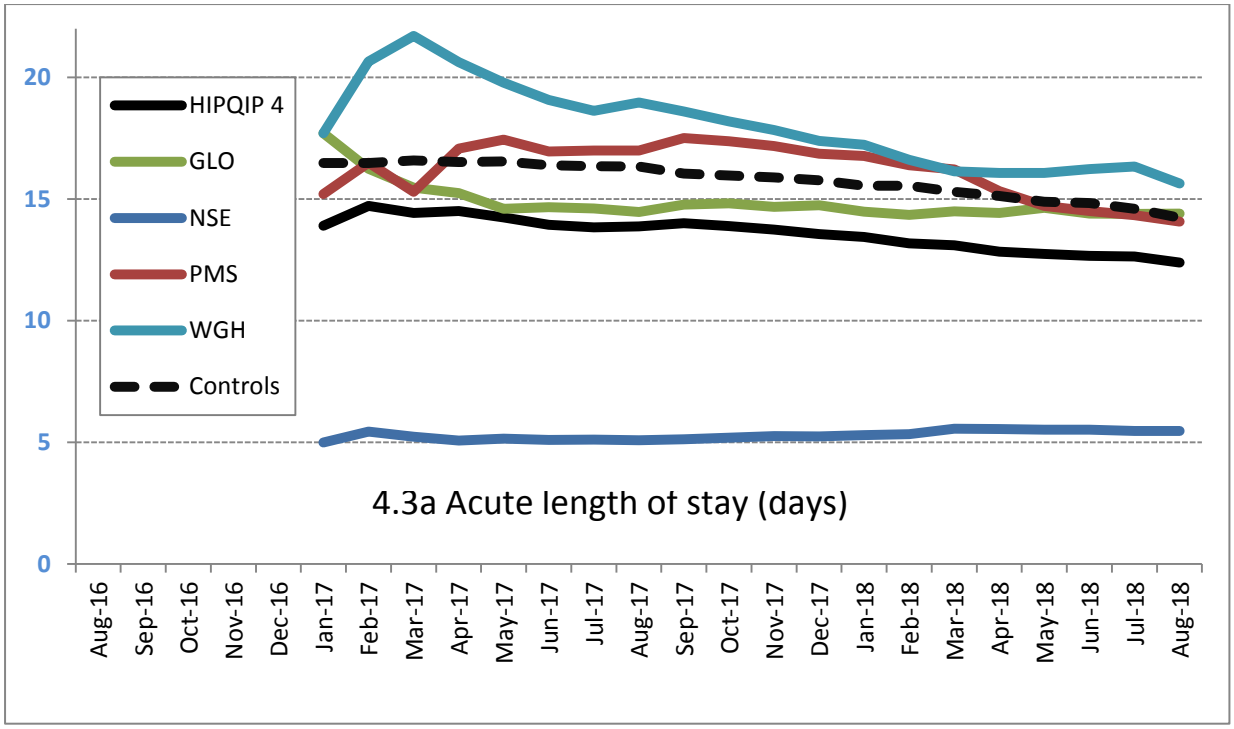
Overall length of stay seeks to capture both acute stay and subsequent stay in rehabilitation settings.

Findings

The NHFD website (www.nhfd.co.uk) reports that across England acute LOS fell by a day (from 16 to 15 days) over this period. Overall LOS fell similarly from 20 to 19 days.

A similar trend was evident in both the Collaborative and Control hospitals. However, the picture is distorted by the very short acute LOS seen with NSE's model of early transfer for rehabilitation.

In addition, the similarity of acute and overall LOS reported in the Control hospitals suggests that and that part of their rehabilitation care may have taken place in other units, and that some of these units continue to under-report their NHS 'super-spell' – a topic extensively discussed in NHFD annual reports (NHFD annual report 2015: www.nhfd.co.uk/20/hipfractureR.nsf/docs/reports2015).


20
15
10
5
0
HIPQIP 4
GLO
NSE
PMS
WGH
Controls
4.3a Acute length of stay (days)
Aug-16
Sep-16
Oct-16
Nov-16
Dec-16
Jan-17
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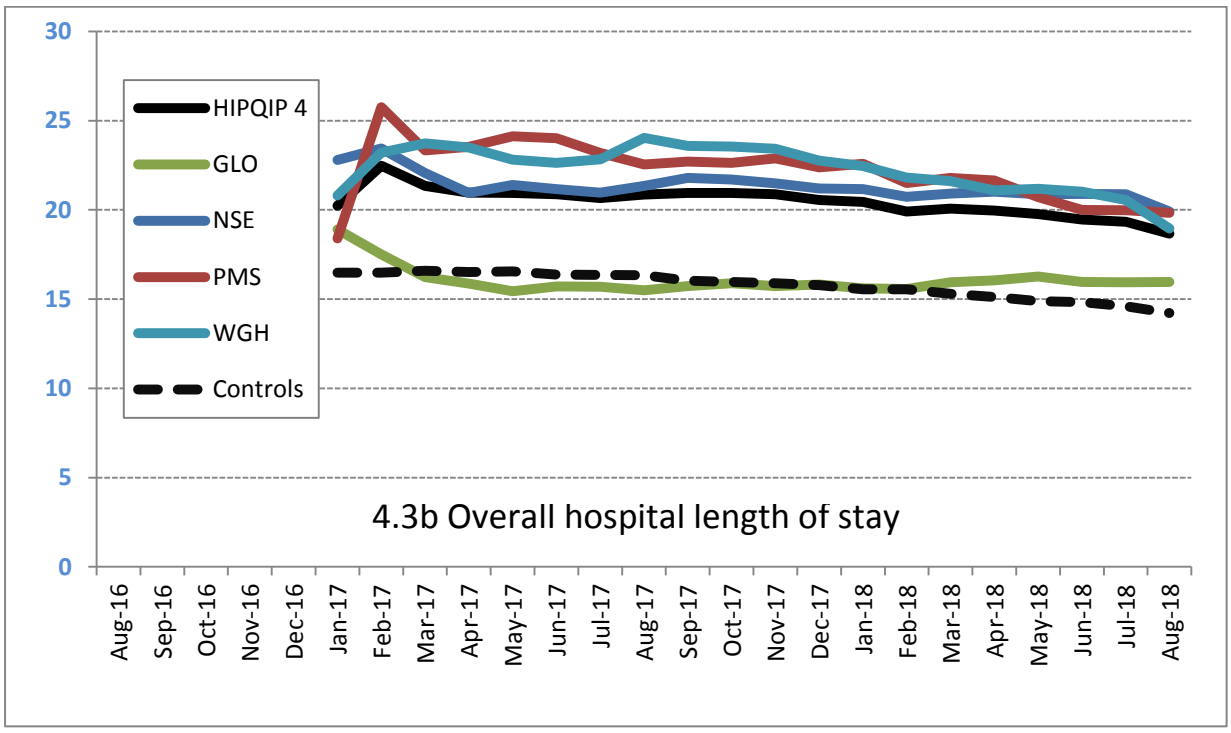
Aug-18


30
25
20
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0
HIPQIP 4
GLO
NSE
PMS
WGH
Controls
4.3b Overall hospital length of stay
Aug-16
Sep-16
Oct-16
Nov-16
Dec-16
Jan-17
Feb-17
Mar-17
Apr-17
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Aug-18

4.3 Emergency readmission rates

Rationale

As discussed above, improved surveillance of pressure ulcer may initially lead to an appearance that their incidence is increasing. In the same way improvements in follow-up procedures may initially lead to the identification of higher rates of hospital readmissions.

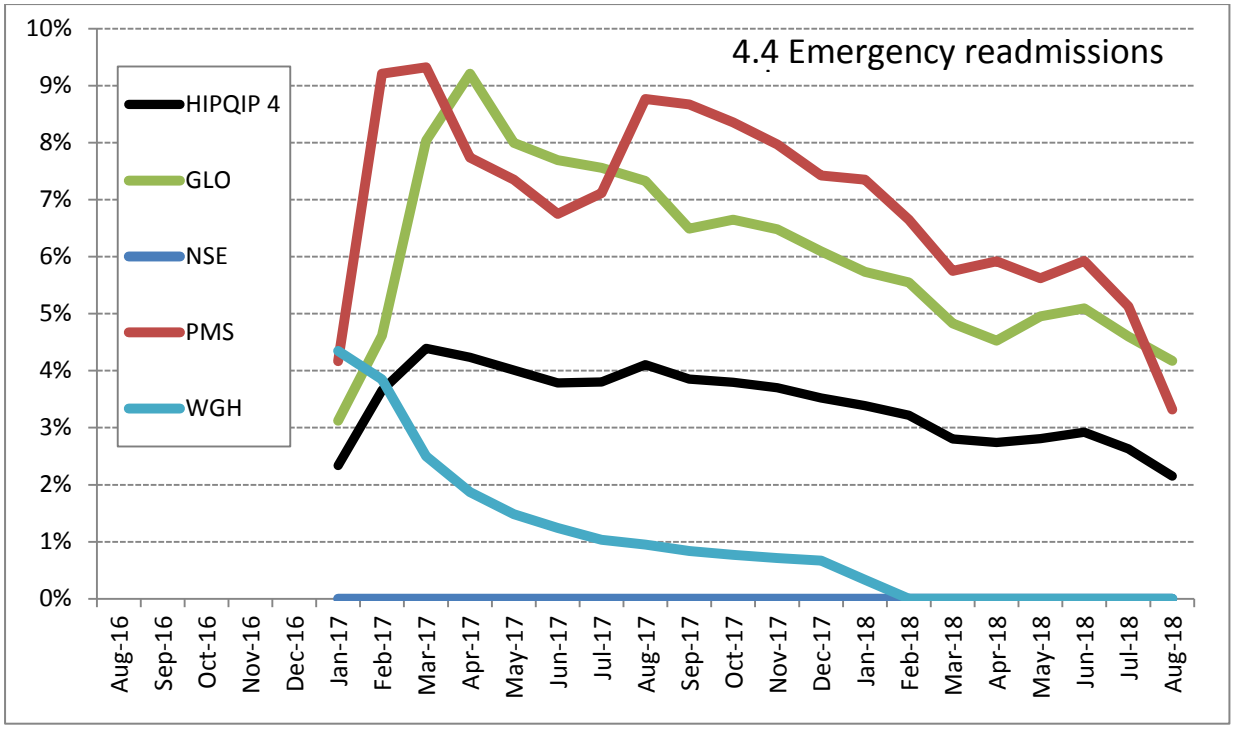
Many readmission are inevitable in a frail complex population of older people, but with half of the £2 billion annual cost of hip fracture relating to medical and social aftercare surveillance it is important to include such events in any assessment of the quality of hip fracture care, rehabilitation and discharge planning.

Unusually low performance is more likely to be a result of flawed surveillance rather than of poor performance.

Findings

The performance of the collaborative is dominated by the figures of GLO and PMS as it appears that these units put considerable effort into collection of accurate readmission data.

This might seem to suggest that they had poorer than average figures. However, their charts are more appropriately viewed as an elegant demonstration of how improved attention for follow-up provides reliable figures that can be used to drive improvements in care – the success of these improvements then being demonstrated by falling readmission rates as the project progressed.


4.4 Emergency readmissions
HIPQIP 4
GLO
NSE
PMS
WGH
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Aug-16
Sep-16
Oct-16
Nov-16
Dec-16
Jan-17
Feb-17
Mar-17
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Nov-17
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Aug-18

4.4 30-day mortality rates

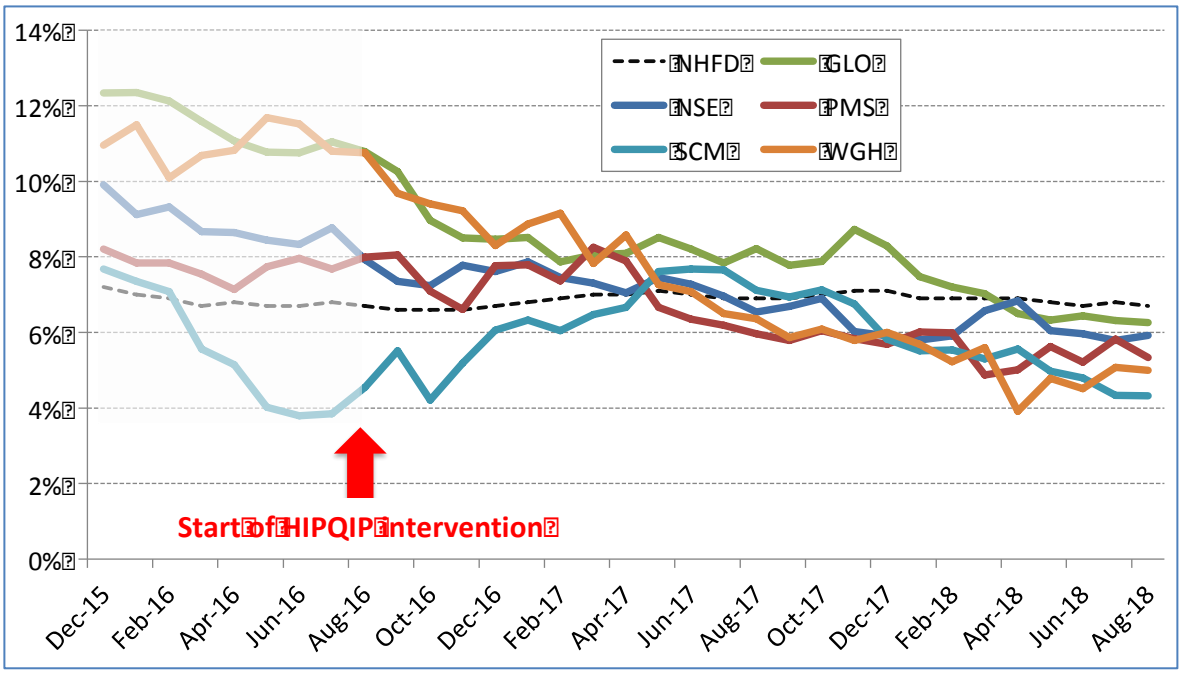
Rationale

The very frail older people who typically suffer hip fracture commonly view a failure to regain their independence and the need for institutional care as a worse outcome than death. However, mortality figures remain a powerful driver for change in modern health care and HipQIP has a stated objective to save 100 lives over the course of the scaling up project.

A number of approaches might be taken to the definition of "total lives saved". The 30 day mortality figures reported by the Collaborative hospitals might be compared with national figures for 30 day mortality reported by the NHFD at the start of the scaling up period. However, across the country here has been a steady improvement in the number of people surviving a hip fracture since the NHFD was established in 2007, so it might be more appropriate to make the comparison with national figures at the end of the two year scaling up period.

Alternatively, comparison might be made with baseline figures for the Collaborative hospitals themselves. However, one of the drivers for scaling up was that these hospitals were initially recording worse than average 30 day mortality figures, so it is likely that regression to the mean would tend to improve these figures which produced an apparent improvement that is not attributable to the scaling up intervention.

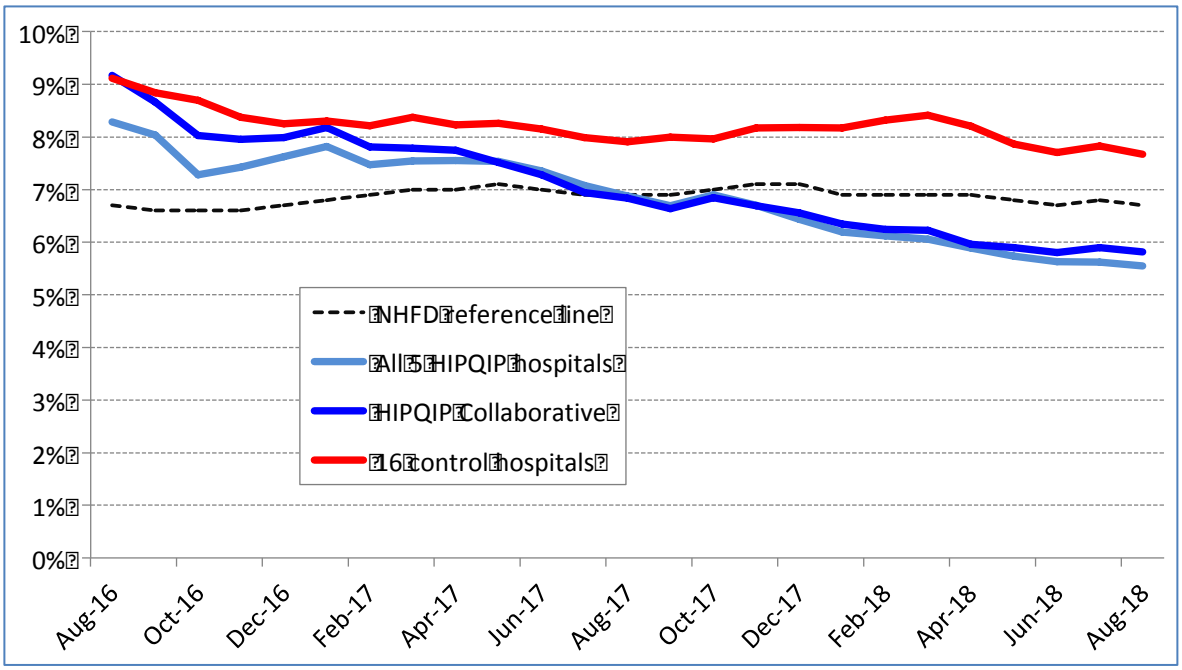
For these reasons we elected to use a set of 16 control hospitals, those units which most closely matched the four Collaborative units in terms of 30 day mortality at the start of the scaling up work in September 2016.



30 day mortality (annualised figures) in the HipQIP hospitals compared to national figures

Across the four English HipQIP hospitals 30 day mortality fell from 9.2% in the year to August 2016, (before the start of the collaborative); to just 5.8% for people presenting in the year to August 2018.

Mortality also fell in 16 matched control hospitals which were recording the same 30 day mortality figure at baseline. However, improvement in these controls was more limited; only falling to 7.7% for people presenting in the year to August 2018.



Combined figures for 30 day mortality (annualised figures) in HipQIP and control hospitals

These figures are based on just four of the five units of the HipQIP collaborative, and do not include any improvement that was achieved in the HipQIP hospital in Scotland. This will have made it much more difficult for the Scaling Up work to have achieve its original objective of 'saving 100 lives'.

In fact the four English HipQIP hospitals successfully recorded 119 fewer deaths within a month of hip fracture than would have been expected if mortality had remained at the baseline figure of 9.2%.

The true impact of the HipQIP intervention is highlighted by the fact the four HipQIP hospitals prevented an additional 77 deaths which is above and beyond the effect of any QI changes the 16 control hospitals made, in the same time period, in response to the same poor baseline performance.

4.4 Return to own home

It is not enough to show that deaths have been prevented, or in fact just *delayed* in this population of very frail, older people, many of whom are coming to the end of their lives.

Older people place greater priority on their independence. For this reason this goal of effective hip fracture care is the focus of the NHFD's Key Performance Indicator 6 – launched in 2018.

In evaluating the impact of the Scaling Up work attention was therefore focused on whether patients who are admitted from their own home successfully returned to live there.

Findings

Collaborative and Control hospitals were matched on their performance at the start of the scaling up work, so it is unsurprising that rates of return home were initially similar at 50%.

Over the period of the Scaling Up project there was a slight improvement in this figure to 51.1% in the Controls. However here was a much greater improvement to 56.9% in the Collaborative hospitals.

This may appear a small percentage, but it was achieved across a large population, and each year an additional 119 patients successfully returned to their own home as a result of the Scaling Up work.

This is the key finding of this evaluation and a hugely positive demonstration of this work's success.

Section 5 Final insights from the Process Evaluation

As seen from the previous sections this complex scaling up programme has enjoyed considerable success. This was also at a time when some trusts were undergoing considerable change and upheaval such as the reconfiguration of services in *GLO* and the downgrading of accident and emergency provision in WGH and in all trusts there were challenging resource issues in terms of increased demand, reduced finances and staff shortages.

5.1 Multi-disciplinary working

When asked why the teams thought they had been successful and what they were most proud of, without exception each one emphasised the importance of their teams. Although in each trust there had always been multi-disciplinary teams (MDT), being part of the collaborative had resulted in these working in different ways so that new relationships had been established across professions, departments and systems.

> "*I think we now have a truly functioning MTD, rather than one in name only. People come together and speak up and I think it's that pulling together by everyone; that's what I'm most proud of, and none of it's rocket science you see, it's all about doing the simple things correctly and making sure everyone does the simple things, that's what it comes down to*." (PMS)

> "*When our clinical lead went off and this management role was thrust onto me I just had to go and speak to the various departments and teams and try to bring them together then our new lead and I shared that role. But it's been amazing really, gathering the data and sharing it, we've all learned so much, we understand each other's roles more and the different challenges. It's helped us to build capacity, which is difficult for a small unit and everyone feels we have really turned a corner. So it's really been a huge culture change in how we work together, ward teams, therapists, surgeons, anaesthetists, theatres, dieticians*." (WGH)

5.2 Patient-focused Care

Rather than previously seeing the patient through the perspective of their individual role and contribution, the teams had actually turned this on it's head and were instead focussed on the patient and his or her journey. So whereas previously MDT's and improvement efforts had been largely led by orthopaedic consultants, the scaling up process had forced a more patient-centred approach, not only because of nutritional support, measuring patient experience and focusing on pain relief and early mobilisation, but also because teams had realised the importance of various

professional inputs to the patient journey and this had been very enlightening for many team members.

> *"We had started an MDT but actually, joining Hip-QIP allowed us to look at it from a slightly different angle and I think it almost –de-medicalising it somehow, you know, and actually helping us to put the* patients *first, and, I think it's been incredibly helpful as we've done loads of things as a result of de-medicalising, I think it's become more accessible and there's more buy-in from all the staff so we are much more patient focused than we were."* (GLO)

"I think that we've actually changed the culture of the way that we treat hip fractures, as a unit and a MDT. You know they are the priority and we discuss them more importantly. As a unit, our theatres, admission, everything, it's about these people that have this problem, who are going to die if we don't get this right. So we have achieved that. I never knew nutrition was so important, says most of the orthopaedic surgeons, you know, I didn't know early mobilisation would make a big difference. I mean yeah your geriatricians might have been able to tell you that. But because we didn't work in that way - and that maybe is one of the biggest learning things. We've changed the way we operate. We have. Our level of awareness amongst my colleagues has grown and I do certainly know a lot more than I used to, I understand the life of a geriatrician and an anaesthetist because it's completely different and the therapists, so we all work totally differently now and what we do is so different that's just so important to have a bit more understanding of everyone's role and more importantly, how this plays out for the patient." (PLS)In one trust, the notion of a patient focussed approach had been further developed by recruiting 'Patient Leaders' and this was seen as having had a positive impact in the various task groups that had been established to progress the various innovations. Many professionals spoke of their positive input by bringing new eyes to situations and helping professionals to see their practices from the patients' perspective.

> *"We've incorporated the patient leaders into those groups and they are really key, about seeing things from the patient's point of view. They're a huge asset."* (NSE)

For the patient leaders themselves, they felt valued and treated as equals within the task groups.

> *"I feel the professionals in our task group really listen to what we have to say and I feel included and involved. No-one excludes you or tries to belittle you. No I honestly feel I can contribute as an equal."* NSE)

5.3 The sphere of influence

Where teams felt they had less influence they had been less successful in improving outcomes, such as patients being x-rayed within one hour of arrival or being admitted to a trauma ward, so demand and systemic issues were also a key part of the story. For example in PMS and WGH a lack of specialist beds frustrated teams in achieving this target, just as the inability to recruit an ortho-geriatrician in WGH impacted on ensuring that patients received an ortho-geriatric assessment. However where the teams were in control of the required interventions improvement in the outcomes were most apparent. This highlights the importance of improvements and interventions being implemented as close as possible to where decisions were made.

5.4 Growing Empowerment

As reported in the interim evaluation, initially teams had felt anxious about what was expected of them and felt that this was not fully addressed at the programme launch event. Many felt that individual contact or a site visit prior to the day would have been helpful to allay concerns and anxieties, explain what would be expected of them and develop their understanding of how the collaborative would operate. Early in the collaborative the teams resisted making autonomous decisions:

> "*I think we were expecting to be, not spoon fed, but I think we were expecting to be told what to do. And I don't think that we expected to have – that we were going to be almost self-generating as much. So therefore we were like, we don't know what we're meant to be doing. In the end it's worked out brilliantly, but I just think it's – we would have got off to a faster start had we been clear about exactly what we were doing.*" (SCM)

> "*I think initially certainly I thought we'd go there and be told do this, do that and such like and it was a bit disconcerting when I realised that really we had to make some decisions and decide what was right for us."* (PMS)

As the collaborative developed, the teams grew in confidence and there was a dawning realisation that they had the power to introduce changes that were in their power to make.

> "*I remember listening to one team's presentation and thinking 'Yeah I'd love to do something like that on the ward.' When I talked to them and asked what I should do to introduce it with our patients – they said 'just go for it'. So I did and they've [exercise classes] been a great success with staff and patients*." (WGH)

Similar comments were made with regard to the tea parties, breakfast clubs, the PainAd assessments, the mobility charts as a means of improving communication and red zimmer frames for people with dementia, all of which were shared around the collaborative. This demonstrates very

clearly how when staff are 'set free' or given permission to innovate they are more than willing to try new approaches and practices which can make a considerable impact on patients and in turn motivate and energise staff, giving a sense of agency and control over their work whilst making positive changes to patient care.

5.5 The synergy of small gains

In each of the trusts, there was recognition that marginal gains in a number of areas had led to the greatest positive impact for patients, such as improved mortality, reduced re-admission, reduced length of stay, pressure sore reduction and return to their own home. This was eloquently stated by one interviewee:

> "*I think the thing is that it's very much about marginal gains. I think that's - you know, and that's been my biggest lesson. I think I was already sort of aware of that, but actually it's when you add those little bits altogether and sometimes the smallest changes can make a dramatic difference and certainly the focus on nutrition has been - you know, it's amazing to see what a difference that really does make, so. But of course if you then join that up with you know, getting people to theatre quickly, the anaesthetic stuff, you know, getting the anaesthetic side, keeping them pain free, mobilising them immediately. So it's about taking your part of it which obviously for me is anaesthetics and putting that into the patient journey as whole, right from the time that they arrive and really focusing on that from start to finish and seeing yourself as a part of the continuum of the care I think is so - I think that's the key thing and we do - all of us I think as doctors tend to work slightly in isolation don't we, you know. I think - well obviously I was at medical school sometime ago but even the teaching in medical school is about teaching in isolation isn't it? It's about, you know, here's a pass for physiology, here's the - you know, here's the clinical side and maybe we need to look at that and focus more on the patient in a holistic way*." (PMS)

5.6 The outlook for sustainability

In relation to sustainability, teams felt positive that they would be able to sustain the improvements already made and many teams had plans for further work they wished to embark on.

"*With regards to sustainability, we're carrying on regardless of whatever happens. The MDT's will continue and we've got version three of our surgical care bundle; we're introducing a policy for vasopressors, we've got a return to ward bundle; that's all happening together, and then our meetings, every time we go to a meeting we sort of rekindle what's happening with the therapists, get updates on nerve blocks; so yeah, no I think it's definitely going to be an ongoing programme*." (PMS)

> "*I feel very positive about being able to sustain the improvements we made for example in nutrition and mobilisation. People are really enthusiastic and are wanting to start projects to improve the patient journeys. We want to improve pain relief and patient*

communication as well as involvement of families. So I think it bodes well for sustainability. " (WGH)

5.7 A Key challenge

In every improvement programme there are challenges and one of the biggest faced by a number of trusts, was that posed by data collection and measurement and the lack of clarity in the operational definitions to be used, as highlighted above.

Further, in most trusts no additional resource was available to collect the data required for the project. For two trusts this was particularly burdensome and some hard decisions had been taken about which data to collect. One trust had been able to recruit a data clerk (PMS), which had significantly eased the burden on staff. In future scaling up programmes it may be worthwhile considering funding for this vital element.

Staff also commented on the changes in data reporting over the course of the project. Initially data across all sites had been provided in addition to the individual results in the dashboards. From the early part of 2018 teams had only received the results of their own data.

> *"It was much better before because we could benchmark ourselves against the other trusts and that was really helpful as it spurred you on to really improve you know. I suppose it introduced that element of healthy competition"*. (GLO)

Post script

Approaches were made to project staff at Queen Elizabeth University Hospital, Glasgow, but they declined to be interviewed. As reported at the interim evaluation, a number of difficulties had been experienced in recruiting and retaining a nutritional assistant and managing the measurement and recording of various elements of the improvement programme including all data entry and collecting patient experience data This workload had fallen to the project manager who frequently worked seven days a week and this state of affairs was not sustainable. There were issues with senior engagement and the clinical lead had resigned from the project. Despite a new appointment being made, continued difficulty with data collection and reporting resulted in the withdrawal of this partner from the final evaluation.

5.8 Conclusion

The collaborative approach to the programme and the supportive learning environment that had been created had added considerably to the project's success and this had been greatly appreciated by all of the teams.

The HipQIP project has undoubtedly delivered significant benefits for patients with a hip fracture. Not least the ability of an extra two hundred plus patients to return to their own homes, in addition to improved mortality. Staff too have also benefitted by improved team-working and a renewed sense of purpose as reported above.

Particularly helpful in gaining essential organisational support had been the independent peer evaluations as these had provided a baseline of where the trusts currently were and where they should focus their efforts.

The most successful interventions were those that the teams could control and influence, whist those that were least successful were those where systemic barriers impacted on improvement such as a lack of financial resource, physical resources such as beds or staff (ortho-geriatricians) and increased demand.

Initial confusion could have been reduced by the lead team undertaking site visits, across the collaborative to explain how it would function and what would be expected of teams.
Ensuring clarity and understanding around collecting key data and clear definitions of key terms would also have allayed confusion and ensured teams were on board much more quickly. Additional funding for data collection would also have freed up team time to focus effort on the improvements.

Appendix A: Measurement framework

Name	Denominator	Numerator	Exclusions	Data source	Notes
Number of cases submitted	All cases	N/A	Nil	NHFD	
HIPQIP indicators					
Percentage of patients that have x-ray within an hour of arrival in emergency department (%)	All cases	Cases where interval between date/time of admission to A&E and dat/time of x-ray<=1	Nil	HIPQIP module	
Percentage of patients considered for critical care (%)	All cases less exclusions	Cases where 'considered for critical care'="Yes"	No operation performed	HIPQIP module	clear *senior documentation of a treatment escalation plan and ceiling of care completed within 48 hours of admission'. *Senior = registrar, specialty doctor or consultant.
Percentage of pateints with surgical care bundle completed (%)	All cases less exclusions	Cases where 'surgical care bundle'="Yes"	No operation performed	HIPQIP module	
Percenhtage of patients given vasopressor support intra operatively (%)	All cases less exclusions	Cases where vasopressor support="Yes"	No operation performed	HIPQIP module	
Percentage of patients mobilised daily until discharge (%)	All cases	Cases where 'mobilised daily'="Yes"	Nil	HIPQIP module	Data to be collected from days 1 – 14 on days when the patient is 'medically fit to do so'. If not medically fit, then this is classed as 'yes' for that day providing the patient has been assessed and a clinical judgement made not to attempt mobilisation. Daily is 7 days per week (not just week days). The patient can be mobilised by a nurse, physiotherapist or healthcare assistant as per NHFD definition for mobilised the day / day after surgery. We are using the NHFD definition of 'mobilised' : 'A patient would be described as 'mobilised' if they are able to sit or stand out of bed on day of their surgery or on the following day.'
Percentage of patients who received an additional meal per day (%)	Sum of interval between date of admission +1 and date of discharge from hospital Trust OR interval between date of admission +1 and date of admission +15 (whichever is lowest)	Sum of days where an additional meal offered="Yes" in the period date of admission+1 to date of admission +15	Nil	HIPQIP module	Data is collected from day 1 (day after admission) – day 14. If there is a delay to surgery, then data is still collected from day 1. An additional meal is anything supplementary to the trust's baseline and any pre-existing supplements the patient received prior to hip fracture. However, each site needs to think carefully as if pre-existing

					supplements are being delivered by the nutritional assistant, then this could be classed as an additional meal. If a patient is offered additional nutrition and refuses, this is considered as not receiving additional nutrition, with the aim of encouraging nutritional assistants to keep returning to patients. If a patient is fed using a naso-gastric tube, then this is considered as receiving additional nutrition. If the nutritional assistant has spent time with a patient giving a lot of encouragement, then this would be classed as a successful intervention ie if a patient has dementia and required encouragement/prompting. Local decisions may be required.
Patient experience indicators					
Average score	N/A	Mean of all responses from the domains Consistency & Coordination, Respect & dignity, Involvement, Doctors, Nurses, Cleanliness, Pian control, Medicines	Nil	Patient experience spreadsheet	
Number of domains >9	N/A	Count of domain averages >=9.0 from the domains Consistency & Coordination, Respect & dignity, Involvement, Doctors, Nurses, Cleanliness, Pian control, Medicines	Nil	Patient experience spreadsheet	
Percentage likely to recommend	All responses	Responses where "would you recommend"="Yes"	Nil	Patient experience spreadsheet	
National indicators					
Met all the criteria for best practice tariff (%)	All cases less exclusions	NHS number is not missing AND Time to surgery is in the range greater than 0 hours and less than or equal to 36 hours AND Time to geriatrician assessment is between 0 and 72 hours AND Geriatrician Grade is equal to 'Consultant' , 'SAS' or 'ST3' AND Bone therapy medication response indicates patient received	No operation performed	NHFD	Prior to April 2017, the following criteria apply: NHS number is not missing AND Orthopaedic GMC number and geriatrician GMC number are not missing AND Admitted Using Jointly Agreed Assessment Protocol is equal to 'Yes' AND Time to surgery is in the range greater than 0 hours and less than or equal to 36 hours AND Time to geriatrician assessment is between 0 and 72 hours AND Geriatrician Grade is equal to 'Consultant' , 'SAS'

		any form of assessment/action AND Falls assessment response indicates patient received any form of assessment/action AND Valid preoperative AMT score AND Valid delirium score AND nutrition assessment is not null and <>"No" AND physiotherapy assessment="Yes"			or 'ST3' AND MDT Assessment is equal to 'Yes' AND Bone therapy medication response indicates patient received any form of assessment/action AND Falls assessment response indicates patient received any form of assessment/action AND Valid preoperative AMT score AND Valid postoperative AMT score.
Received pre-operative nerve block in emergency department or ward (%)	All cases	All cases where Nerve block in A&E or the ward before arrival in theatre suite='Yes'	Nil	NHFD	
Admitted to orthopaedic ward within 4 hours (%)	All cases less exclusions	Interval between time of admission to A&E and time of admission to OW <=4.0 hours	Not admitted via A&E, No admission date/time, Date of admission to A&E after date of admission to OW.	NHFD	
Assessment by an orthogeriatrician peri-operatively (%)	All cases	Cases where the interval between time of admission to A&E or time seen by trauma team and time assessed by geriatrician <=72.0 hours AND geriatrician grade = Consultant or SAS or ST3+	Nil	NHFD	
Assessment by an orthogeriatrician pre-operatively (%)	All cases less exclusions	Cases where date/time assessed by geriatrician <=date/time surgery AND geriatrician grade = Consultant or SAS or ST3+	No operation performed	NHFD	
Non operative management (%)	All cases	Cases where operation performed = "No operation performed"	Nil	NHFD	
Surgery within 36 hours of admission (%)	All cases less exclusions	Cases where interval between date/time of admission to A&E and date/time of surgery is in the range greater than 0 hours and less than or equal to 36 hours	No operation performed	NHFD	
Mobilised out of bed by the day after surgery (%)	All cases less exclusions	Cases where mobilised post surgery does not equal 'No' and does not equal	No operation performed	NHFD	

		'Unknown' and is not null			
Outcome indicators					
Patients with hospital acquired pressure ulcers (%)	All cases	All cases where pressure ulcer = 'Yes'	Nil	NHFD	
Percentage of patients from their own home discharged back there (%)	Cases where Residence before this hospital admission="Own home/sheltered housing"	Cases where discharge destination from trust = "Own home/sheltered housing"	Nil	NHFD	
Acute length of stay (days)	N/A	Mean acute length of stay (Interval between time of admission to A&E and time of discharge from ward)	no discharge from orthopaedic ward date; discharge from ortopaedic ward date< admission date.	NHFD	
Overall hospital length of stay (days)	N/A	Mean Trust length of stay (Interval between time of admission to A&E and time of discharge from Trust)	no discharge from Trust date; discharge from Trust date< admission date.	NHFD	
Emergency readmissions within 30 days (%)	All cases	Cases where date of emergency readmission is not null AND interval between "Date of emergency readmission" and date of admission to A&E <=30	Nil	HIPQIP module	
30-day mortality (%)	All cases	Cases where date of death is not null AND interval between "Date of death" and date of admission to A&E <=30	Nil	NHFD Office of National Statistics (ONS)	

Appendix B: Surgical care bundle

Hip Fracture Surgical Care Bundle Tool

Ward:.....

Date:.....

Write in black ink

Mark tick boxes as directed

Northumbria Healthcare NHS

NHS Foundation Trust

Affix patient label or

NHS Number:.....

Trust Number:.....

Surname:.....

Forename:.....

Date of Birth:.....

Address:.....

To be completed by Surgeon/ Floor Nurse in the Operating Theatre

N.B This form is a guide- clinicians should use their judgement when managing individual patients

Prior fascia iliaca block	Yes / No
Has critical care consultant been involved in discussion	Yes / No
Patient is golden patient	Yes / No
Consultant Anaesthetist involved	Yes / No
Consultant Orthopaedic Surgeon involved and came into theatre	Yes / No
Was Urinary Catheter necessary?	Yes / No
Indication:	
Prewashed	Yes / No
Prep with 2% Chlorhexidine	Yes / No
Oral Tranexamic acid given: (1st dose)	Yes / No
(2nd dose)	Yes / No / Not Applicable <8hrs after 1st dose
Grade of anaesthetist	Consultant / Staff grade / SpR / Junior Dr
Anaesthetic time (entry anaesthetic room to ready to position):	

Prosthesis
Attach Sticker Here

Implant (circle):

DHS / Cannulated screws / IM Nail

Cemented Hemiarthroplasty / Cemented THR

Uncemented Hemiarthroplasty / Uncemented THR

Arthroplasty: Positioned in anaesthetic room	Yes / No

Has vasopressor infusion been used by anaesthetist	Yes / No
Fast track technique of local anaesthetic used	Yes / No
Local anaesthetic infusion catheter	Yes / No
Reason if no (free text):	

Grade operating surgeon	Consultant / Staff grade / SpR / Junior Dr
Nottingham Hip Fracture Score:	High Risk / Low risk
Operative time (incision to closed):.....Head out / wire in head centre by 20 min	Yes / No
Consultant Scrubbed:	Yes / No
Form contents verified by: _____(Operating Surgeon signature)	

(For Office use only)

Post operative weight bearing clarified	Yes / No
Follow up documented	Yes / No
Check X-rays	Yes / No

Author R Pratt, D Inman, Y Wilcock Altered Date 24/07/2015 Review Date 24/01/2017 Version 4 Surgical Care Bundle Tool– Hip Fracture

Hip Fracture Surgical Care Bundle Tool

Appendix C: HIP QIP Final Evaluation

1. Tell me about the HIP-QIP improvement programme over the past year?

2. What are you most proud off?
    - Which interventions have been most successful?
    - Why do you think that is?
    - What was it about that intervention that led to the success?

3. Is there anything you would have done differently?
    - Were the various intervention components as you expected at the outset of the project?
    - Is there anything that has not worked as well as you would have liked?

4. What have been the key difficulties you have faced in introducing the new procedures/practices?
    - What support has been available in the organisation?
    - Has there been senior buy-in?
    - Were there any barriers to achieving your objectives?
    - What were they?

5. Tell me about the data collection and measurement that has been involved

    - What if any challenges have you encountered in collecting/entering the data?

6. Tell me about the support you've received from Northumbria?

- Is there anything that you were expecting in terms of support that hasn't been delivered?
- What has been most helpful?
- How have you found the learning events?
- Have they met your needs?

7. What has been the effect of being part of a collaborative?

- Did you find it a supportive learning environment?
- Anything else you would like to say about your experience or your involvement in this collaborative?

8. What have been the key lessons you have learned about quality improvement?

9. How do you think you will be able to sustain the improvements?

Glossary

Term	Definition
Considered for critical care	Clear senior documentation of a treatment escalation plan and ceiling of care completed within 48 hours of admission'.
Surgical care bundle	A professionally agreed form completed on various aspects of peri-operative care (see figure 1)
Vasopressor support	Whether that patient has received a vasopressor infusion intra-operatively. Patients typically receive one at a baseline rate as standard that can be increased or decreased as required to maintain normal blood pressure during the surgery.
Mobilised	A patient would be described as 'mobilised' if they are able to sit or stand out of bed
Additional meal	An additional meal is anything supplementary to the trust's baseline and any pre-existing supplements the patient received prior to hip fracture. However, each site needs to think carefully as if pre-existing supplements are being delivered by the nutritional assistant, then this could be classed as an additional meal.
Best Practice Tariff	A set of indicators designed to reflect the delivery of care under of hip fracture programme that hospitals in England would receive additional payment if received.
Nerve block	A regional anaesthesia that can be delivered as a supplement to operative anaesthetic or in the emergency department or ward as part of routine pain management
Orthopaedic ward	An orthopaedic, orthogeriatric or specialist hip fracture ward designed and staffed exclusively for managing patients with musculoskeletal trauma.
Orthogeriatrician	A consultant, associate specialist, staff grade or ST3+ geriatrician with timetabled activity to treat orthopaedic trauma patients.
Hospital acquired pressure ulcers	Pressure ulcers of grade 2 or above which occur during the acute admission. Not community required ulcers present on admission, moisture lesions or other tissue damage.