GETTING IT RIGHT FIRST TIME

Adult Orthopaedic Trauma

GIRFT Programme National Specialty Report

by Bob Handley
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January 2024

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Foreword from Professor Tim Briggs

This GIRFT national report for adult orthopaedic trauma marks the culmination of several years of work by Bob Handley and his team, and I am delighted that we can now share Bob's recommendations to NHS colleagues to support their extraordinary efforts in recovering services post-pandemic and improving the treatment and care of patients.

The potential for change offered by these recommendations should not be underestimated: adult orthopaedic trauma (T&O) teams treat hundreds of thousands of people with fractures, dislocations and ligament injuries annually, many in the older, frail patient – indeed, around 70,000 older people with hip fractures alone are admitted to hospitals in England every year.

It is vital, therefore, that recommendations identified in this report to address variation in the provision and quality of treatment are adopted, to ensure that factors such as the time, day or place of admission, availability of clinical staff, or other factors outside of a patient's control, are not a barrier to them receiving the best possible care and outcomes.

I'm also encouraged to see a forward-thinking commitment to developing more Fracture Liaison Services, where older fracture patients identified as being at risk can be assessed for increased bone fragility and offered preventative treatment where appropriate, to both protect them and ease future pressures on services and staff.

This report is based on national data, in-depth questionnaires to all local orthopaedic trauma teams and networks and Bob's insights from his deep-dive discussions with clinicians across England during his review. He has clearly identified that top-performing T&O services rely on strong collaborative working across the many specialties involved in patient care. An overarching objective of this report is to achieve better collaboration across those staff groups, and to that end I am pleased to note that going forwards Bob and his GIRFT team will be modelling that collaboration and drawing on the support and expertise of GIRFT's leads in geriatrics, perioperative medicine, emergency medicine, radiology, nursing and therapies.

The many examples of exemplar practice highlighted in this report demonstrate the commitment of colleagues working in T&O to develop and improve their services. This, alongside the strong engagement Bob has had with colleagues on his visits, is essential, as GIRFT cannot succeed without the enthusiasm of clinicians, managers, and all involved in improving patient care.

Looking ahead, I hope this report provides the support and impetus for all those involved in the specialty to take on board the data-driven evidence demonstrated here and to work together, shoulder to shoulder, to bring about change.

Professor Tim Briggs *CBE*

GIRFT programme Chair and National Director for Clinical Improvement and Elective Recovery for NHS England

Professor Tim Briggs is a consultant orthopaedic surgeon at the Royal National Orthopaedic Hospital NHS Trust, where he is also Director of Strategy and External Affairs. He led the first review of orthopaedic surgery that became the pilot for the GIRFT programme, which he now chairs.

Introduction from Mr Bob Handley

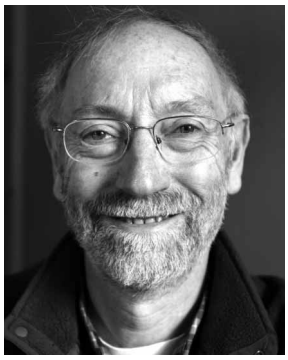
As we started developing our review, it was clear we had a choice to make: should we use the opportunity to micromanage individual examples of unwarranted variation or take a step back and look at the overall direction of travel for trauma services.

We chose the latter, and throughout the deep dives we used an analogy of the Titanic and its deckchairs to focus on the big picture before moving onto areas of surgical practice or detailed changes to the pathway. As a result, this report's main objective is to create the environment in which all those who can constructively contribute to provide and improve patients care have an opportunity to do so, and to share the good practices encountered.

The focal point of GIRFT adult orthopaedic trauma is the orthopaedic trauma patient. A common feature for such patients is the point in time that an injury occurs. Whilst there may be predisposing factors, missed opportunities for prevention or confounding co-morbidities the moment injury marks an abrupt change in need for the patient. Satisfying this need can be approached in a number of ways. Broadly the patients fall into three groups, those with an injury that can be managed completely and discharged at the first point of contact, an intermediate group, whose continuing care can be provided in clinic or as a day case, and those that required immediate admission. The default should be to manage the patient in the first applicable group.

We saw a need for continuing vigilance to ensure equitability of care. There was unwarranted variation in the extent to which the advantages of data, awareness and incentives associated with one group of patients were used to benefit other patients with similar need, most notable in relation to hip fractures.

Whichever route is chosen, that pathway requires the resources of place, equipment, and skilled personnel. Getting the best out of available resources is best achieved by all those individuals involved in the pathway contributing to the thinking on how to optimise it. We saw a marked variation in the attendance of the various disciplines at deep dives and departmental meetings. The managerial structures of most trusts place the clinicians and health professionals involved in the daily care of orthopaedic trauma patients in different divisions or silos. It was clear in deep dives that the constructive involvement of senior management and routine collaboration of colleagues in the quality improvement (not just delivery) of pathways of a patients of care was beneficial. With such collaboration the 'deckchairs' can then be re-arranged to implement the various national guidelines and standards to best serve local needs both now and as they change.



Mr Bob Handley

GIRFT Clinical Lead for Adult Orthopaedic Trauma

Mr Handley is a consultant for trauma and orthopaedic surgery at the John Radcliffe Hospital, Oxford University Hospitals NHS Foundation Trust, as well as an honorary senior lecturer in trauma and orthopaedics at the University of Oxford. He is a past president of the British Orthopaedic Association, the Orthopaedic Trauma Society and AOUK. He was co-chair of the NICE guideline development group for complex and non-complex fractures and a member of the GDG for hip fractures. He is a member and previous chair of the British Orthopaedic Association trauma committee, the group responsible for developing the British Orthopaedic Association Standards (BOASTS), which have become accepted as the readily accessible source for standards of care in this field.

Statements of support

Royal Osteoporosis Society

The Royal Osteoporosis Society welcomes GIRFT's important quality improvement work and, specifically, this important report. It's critical that all of us working in direct healthcare and support organisations work closely together to make sure everyone has access to the quality care they need, when they need it, wherever they live. When it comes to fracture care, osteoporosis and secondary fracture prevention, we have our work cut out for us.

Patients tell us through our helpline and in our recent Life with Osteoporosis report that they want to be free from pain, fear of fractures and disability, and to live their lives being comfortable to undertake their activities of daily living. When things do go wrong, they want a quick diagnosis, information and support and to get back to their homes.

Orthopaedic trauma care is truly multidisciplinary, which is both a strength and weakness. If we get it wrong, we see wide-reaching and sometimes hidden consequences. A fifth of women break three or more bones before being diagnosed with osteoporosis and getting the treatment they need. Two thirds of spinal fractures never come to medical attention - that's 2.2 million people left without assessment and treatment and put at risk of further fractures and disability.

This revolving door of fragility fractures could be avoided with better support, leadership and education for health professionals - from ED and imaging to the ward, theatre and rehabilitation. Additionally, important effectiveness measures, pathways and processes are needed to improve the quality of care and outcomes for these patients, particularly through equal access to a quality Fracture Liaison Service (FLS).

FLSs are a well-tested world standard of care, with a proven record of preventing secondary fractures, yet only 61% of the UK population have access to an FLS. Even for those who are covered, quality is often wildly uneven. This postcode lottery is creating deeply unfair outcomes.

As well as the missed opportunities to protect patients, we're seeing that fragility fracture are an increasing burden on the health service, just at the time that it needs space to recover. We have an answer in the FLS model, but we have work to do in levelling up access to tackle the current unfairness. The argument to invest in preventing future fractures to reduce the burden of treating patients later when they sustain them is powerful.

If we get this right, we can transform the quality of later life for many tens of thousands of people, as well as making a game-changing difference for the recovering NHS.

Craig Jones
Chief Executive, Royal Osteoporosis Society

National Hip Fracture Database

The timely and appropriate care of older patients following injury is crucial to patient experience and their outcome but is also an effective measure of overall hospital performance. The GIRFT programme and its findings within this report are central to understanding how we look after our older patients, both within and between hospital services. The National Hip Fracture Database (NHFD) welcomes this report and is delighted to have provided, through our Key Performance Indicators, benchmarking and context.

The care of patients with fragility fractures of the femur has long demonstrated the importance of the coordinated input of multiple specialties in improving patient outcome. Concerted and effective pathways involve nurses, doctors, therapists and allied healthcare professionals both in hospital and in the community setting. This interplay is highlighted in the report as a key feature of trauma overall, and especially in the management of older patients.

Data from the NHFD features within the report in order to help hospitals assess their wider performance. However, we would like to highlight and contextualise this; the NHFD population at risk is only an element of the wider older patient injury group. Many patients with injuries outside of the femur do not benefit from the overview afforded by our programme of audit and quality improvement. All of the benefits of cohorted care, prompt senior clinician involvement and expedited surgery do not apply to a large number of older injured patients. We celebrate the recommendations within the report, therefore, in terms of pathway development and focus on the needs of all older patients with injuries admitted to hospitals across England and Wales.

Will Eardley

Orthopaedic Clinical Lead, NHFD National Hip Fracture Database

British Orthopaedic Association

The British Orthopaedic Association (BOA) welcomes this GIRFT report on adult orthopaedic trauma. The BOA has the objective of 'caring for patients and supporting surgeons' across the whole range of trauma and orthopaedic surgery, which includes acute conditions, chronic conditions and injuries, in both children and adults. While there is significant pressure on us to satisfy the huge demand for elective orthopaedic care and catch up with the backlog that pre-dated the Covid-19 pandemic, and was worsened by it, we also recognise the need to care for the injured.

Many patients with orthopaedic trauma injuries have to be admitted to hospital, most frequently due to associated frailty, immobility or co-morbidities. The report highlights the need to care for these patients both appropriately and expeditiously. In particular, it notes that their care needs to be delivered by an effective team that recognises their multiple needs.

We welcome the initiative that such a team approach is reflected in the governance and quality improvement of patient pathways. We also recognise and support the need for equitable access to a service which is fair for all. Patients with similar needs should be treated similarly and not purely to reflect performance targets. Care should not vary unnecessarily as a consequence of time or day of admission. As teamwork is crucial, patients need to be admitted to the right place for the right team to support them.

We recognise the significant group of patients who do not require immediate admission but do need interventional treatment. This potentially 'lost' group of ambulatory trauma patients must not have their treatment delayed significantly due to capacity issues, with consequences on their treatment and perhaps their outcome. They genuinely do fit the Getting It Right First Time label.

An important step in addressing workflow issues is an awareness of demand and capacity. We welcome the suggestions that data should be collected routinely so that, on a continuous basis, there is both a local and national awareness of demand and capacity for orthopaedic trauma.

The BOA looks forward to the implementation of these recommendations.

Deborah Eastwood
BOA President

Executive summary

Background and opportunity

Trauma and Orthopaedics (T&O) is a surgical specialty which provides care to people with musculoskeletal conditions which may have degenerative, infective, inflammatory, congenital and traumatic origins. This report is not just about the surgical practice in a single specialty but rather the care of those people who have experienced orthopaedic trauma. The spectrum of such trauma is broad, from life threatening multiple injuries and independence threatening fractures in the frail to those for whom all that may be required is support and reassurance. A common feature is the importance of time; not treating problems in time is deleterious for the individual patient, whilst wasting time in the fallow occupancy or the unnecessary use of resource is deleterious for the service as a whole. Appreciating this gives us opportunities to manage orthopaedic trauma in a manner better for both patient and system.

There has always been some tension in achieving the balance between the treatment of acute and chronic conditions; a situation worsened by waiting times in elective care. The model supported in the NHS Long Term Plan was to physically separate 'hot' and 'cold' management sites and this has developed into a programme to implement elective hubs within the wider in GIRFT programme. The primary objective is to allow space for 'cold' work to continue year around protected from seasonal pressures and fluctuations in acute demand, whilst striving for this it is implicit that the capacity for 'hot' work should be maintained. To ensure this the demand and capacity for orthopaedic trauma needs to be monitored as assiduously and in parallel with that for elective needs.

Effective team management

So frequently do orthopaedic trauma inpatients have associated problems such as frailty, significant co-morbidities, multiple injuries, mobility issues and social problems that the need for team management is the norm. For teams to function they need the right members and a location. Trauma patients are often not admitted to wards designated for orthopaedic trauma in a timely fashion. This a consequence of acute hospitals running at near full capacity and the majority of orthopaedic trauma patients presenting in the afternoon or evening. As a result, these patients are often not on the correct ward or remain in the Emergency Department and are 'outliers', which means they may be separated from team members best suited to care for them.

Patients with orthopaedic trauma needs are most commonly admitted under the care of a named T&O surgeon, but this responsibility comes without authority. The routine involvement of other specialties and allied health professionals in the delivery, governance and quality improvement of care is highly variable. It is evident from our findings that there is a need for multidisciplinary governance of the whole orthopaedic trauma pathway.

Equity of care

The most closely monitored orthopaedic trauma patients are those who have sustained a hip fracture. This is justifiable as they are common, life changing and a significant challenge for the patients and health service. However, there was unwarranted variation in how the benefits of the pathways of management for hip fractures are shared for the benefit of other patients with similar needs. A consistent theme of this report is that there should be equitable care for patients with similar needs.

Prevention

Introducing prevention as the last paragraph may seem perverse. However, with fragility fractures the big opportunity for the health system is to prevent the next fracture. One low energy fracture may indicate that a person is vulnerable to sustaining another which is often more serious. Furthermore, there is appropriate, cost-effective prophylactic treatment which can protect individuals from such a secondary fracture. The access to and availability of secondary fracture prevention services (often termed Fracture Liaison Services) demonstrate significant unwarranted geographic variation.

Our findings and recommendations

Many aspects of inpatient orthopaedic trauma services have improved considerably over recent years. This is consequent of a virtuous circle of combined engagement and efforts of clinicians and management, available data, and guidelines on what works best.

This report aims to build on these successes to date by reducing unwarranted variation across the whole breadth of orthopaedic trauma pathways. Critically, our aim is to do this regardless of the type of fracture a patient experiences and, in doing so, ensure trauma care is more equitable.

Concurrently, a main priority for this report is improving clinical governance to enable continual improvement across the pathway, prioritised as necessary based on the data locally available. A common theme throughout our deep dive visits to trusts has been the clear need for 24/7 multidisciplinary governance of the whole pathway, as it operates for patients, with any fracture. We have seen wide variation in how effectively colleagues from the range of disciplines involved in care of the orthopaedic trauma patient communicate and collaborate with each other to deliver, monitor, govern and improve the pathway.

We hope this report provides illustration of how multidisciplinary governance can work well, and highlights governance arrangements that can be used. Using this approach, and the rest of this report's recommendations, we expect providers and systems will progressively deliver a service that:

- is more equitable;
- is more responsive to best practice guidance;
- continuously reduces unwarranted variation.

We have summarised our findings and recommendations below, following the same structure as the main body of the report. We have set out ten recommendations (although some recommendations cover more than one area) based on the extensive discussions we have had with the system, as well as supporting data, and best practice guidelines. More detail on each recommendation – including how they can be achieved, and how outcomes against them can be tracked – are found in the corresponding sections of this report. We have also identified two areas for further work.

Equity of provision

Recommendation 1	The Trust quality committee should have mechanisms ensuring that BPT criteria, and NICE, GIRFT, and BOAST recommendations and similar clinical guidance are applied to all the clinically relevant orthopaedic trauma patient cohort, and not just the patient cohort referred to in the guidance. For example, this would mean that Fragility Hip and Femur Fracture BPT criteria are applied to all non-ambulatory fragility fractures.
Findings	There is significant variation in the care provided to an orthopaedic trauma inpatient, based on several factors including, but not limited to: • the time or day of admission - the proportion of hip fracture patients admitted to an orthopaedic ward within 4 hours of admission to ED is 29.7% (**Figure 6**); • the availability of clinical staff in the pathway; • ward or location of admission; • whether treatment for the fracture type is monitored nationally. There should be equitable quality of care and treatment for orthopaedic trauma patients regardless of factors outside of their control, with any barriers to this minimised.
Advice	Equal priority and the focus should be given to patients with all types of sustained fractures, with equal effort and attention given to meet time to surgery targets set out in all applicable NICE guidance. Increase the available resource to bring weekend care up to the standard of weekday care, if necessary, by spreading the currently used resource more equitably across the week. Ensure that all staff in the patient's pathway are available throughout the week, including access to orthogeriatricians, anaesthetists and physiotherapists for all fracture patients where this is required. Reduce the proportion of orthopaedic trauma patients being cared for on outlying wards (see recommendation 5).
Measurement	Trusts should audit the following: • hip fracture BPT criteria for all NAFF; • number of outliers, by type of fracture; • whether all members of the team see patients based on clinical need, irrespective of fracture location; • variation in specialty staff and theatre provision compared to patient need over the course of the week; • the percentage of patients supported postoperatively to weight-bear the activities of daily living, by fracture type.

Recommendation 2	Trusts should ensure that patients, over the age of 50, who sustain a fracture either from a low-energy mechanism (such as a fall from a standing height or less) or with no clear history of trauma are identified. This can be done by using radiology reports. Following identification there should be an active, robust mechanism for assessing the patient for increased bone fragility and associated high risk of further fractures and ensuring the patient is initiated on bone sparing treatment where appropriate. Appropriately resourced secondary fracture prevention services (often referred to as Fracture Liaison Services) should be in place to ensure this happens in a reliable and consistent manner. This is in accordance with recommendations in the Best Collaborative Pathway Improvement Programme's High Impact Restoration Strategy. It is also in line with recommendations in: • The NHS Long Term Plan (2019)[8] • NICE Quality Standard 149 (2017)[9] • Public Health England's falls and fractures consensus statement (2017)[10] • The Department of Health's 'Falls and Fractures – Effective Interventions in Health and Social Care' (2009)[11] • The British Orthopaedic Associations' Blue Book (2008)[12]

[8] *NHS. The NHS Long Term Plan (p 36). 2019. Available from: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf*

[9] *NICE. Osteoporosis Quality Standard. 2017. Available from: https://www.nice.org.uk/guidance/qs149/resources/osteoporosis-pdf-75545487906757*

[10] *Public Health England. Falls and fracture consensus statement: Supporting commissioning for prevention. 2017. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/586382/falls_and_fractures_consensus_statement.pdf*

[11] *Department of Health. Falls and fractures: Effective interventions in health and social care. 2009. Available from: https://laterlifetraining.co.uk/wp-content/uploads/2011/12/FF_Effective-Interventions-in-health-and-social-care.pdf*

[12] *British Orthopaedic Association. The care of patients with fragility fracture. 2007. Available from: https://www.bgs.org.uk/sites/default/files/content/attachment/2018-05-02/Blue%20Book%20on%20fragility%20fracture%20care.pdf*

Recommendation 2 (continued)

Findings	Many patients who have had a fracture are at risk of subsequent, potentially more serious fractures in the future. Identifying patients in which preventative measures can be taken, can help prevent subsequent fractures. There is significant unwarranted variation in whether patients with low-energy or fragility fractures are identified as being at risk and needing further assessment, and if so the mechanisms by which this occurs. There is variation in the process of initial identification between trusts, and between anatomic sites of the presenting fracture. Even when the patient is identified as needing further assessment and care, there is unwarranted variation in both the availability and quality of FLS provision throughout the country. Recent findings show that just over half of NHS acute trusts provide an FLS.
Advice	Systems should use the ROS implementation toolkit to develop business cases for and implement Fracture Liaison Service, and audit services on an ongoing basis.
Measurement	Trusts and systems should use the clinical standards in the ROS FLS implementation toolkit to identify cases from referral and provide FLS services, as well as KPI 7 in NHFD[13].

Multidisciplinary clinical care and governance

Recommendation 3	**The Trust Quality Committees should ensure that all clinicians delivering the pathway of care for orthopaedic trauma patients contribute to its quality improvement. This requires proportionate involvement in governance, audit and mortality and morbidity (M&M) meetings from staff groups commonly including, but not restricted to:** • **Trauma and orthopaedics** • **Emergency medicine** • **Radiology/radiography** • **Orthogeriatrics** • **Anaesthetics and peri-operative medicine** • **Junior doctors** • **Nursing and allied health profession (AHP) staff**
Findings	During deep dives, we found governance arrangements in orthopaedic trauma are principally the responsibility of orthopaedic consultants and involvement from other specialties involved in the pathway was less consistent. This makes improving the pathway of care for orthopaedic trauma patients more challenging due to the number of specialties providing their care.
Advice	It would be beneficial for all clinical staff involved in the pathway to have some experience of M&M meetings, but it is not necessary or practical for all clinical staff to attend every meeting. Existing supporting professional activities (SPA) time for audit and governance should be used for these meetings, which typically occur monthly or bi-monthly, meaning some staff time currently spent in specialty meetings will be used for these meetings instead. Successful clinical governance arrangements will have a regular membership of individual staff representing all clinical staff groups. Staff may rotate to ensure as many staff as possible have some exposure to the meeting.
Measurement	Meeting attendance should be monitored. Attendance should be broadly proportionate to the WTE input provided by each clinician to the pathway of care. For example, attendance from emergency medicine would reflect the proportion of ED attendances that involve orthopaedic trauma. For an illustrative example, this could mirror the Northumbria model demonstrated in the case study on p44. In addition, staff morale should be taken as a proxy measure for successful governance. Trusts should monitor from qualitative feedback how well supported ward nurses and ward doctors feel by consultants of all specialties involved in the pathway.

[13] *Royal Osteoporosis Society. FLS Implementation Toolkit. Retrieved from: https://theros.org.uk/healthcare-professionals/fracture-liaison-services/implementation-toolkit/*

Recommendation 4	Trusts should have written policies identifying the clinical staff involved in the treatment of 'orphan conditions', for which there is no one specialty that considers themselves to be trained to manage patient care. We will also co-develop guidance on collaborative management of orphan conditions with specialty associations and colleagues in national bodies, such as the GMC and elsewhere in NHSE, as needed. These conditions include: • chest injuries; • nonsurgical head injuries; • pubic rami fractures. As it is unlikely that any individual specialty is going to accept full responsibility for some conditions it is important that each specialty should play its part to prepare itself for collaborative management of its patients in its curriculum and training.
Findings	Some patient groups do not fit neatly into any specific pathway. HES admission data, GIRFT questionnaire data, and information garnered during deep dive visits demonstrates that there is significant variation in terms of the admitting specialty for certain diagnoses, including isolated non-surgical head injuries, pubic rami fracture, and chest wall injury. Across trusts, patients with these types of injuries are admitted to several different departments, including the following: • Trauma and orthopaedics • ED • General surgery • General medicine • Geriatrics • Neurology • Thoracic surgery • Respiratory medicine • Stroke • Major trauma service Given this variation, there is a need for clear protocols on how these patients are managed in order to ensure equitable care.
Advice	Trusts should have clearly defined pathways for the management of these patients with these types of injuries to use the specialty resources available to them collaboratively and equitably. Trusts need to have strong governance arrangements in place for all patients, including those with injuries which fall between established pathways. Trusts should have clinical governance structures in place to provide clarity for which components of the pathway each specialty is responsible for locally and have oversight of collaborative multidisciplinary work.
Measurement	Monitor count of complaints and/or litigation claims for patients with these injuries. Trusts to measure mean length of stay against the national average for patients with these diagnoses. Local audit of standards of care for diagnoses which fall between established pathways.

Future Work	The GIRFT orthopaedic trauma workstream will draw on additional support from GIRFT clinical leads and advisors from other specialties and professions. This will include geriatrics, perioperative medicine, emergency medicine, radiology, nursing and therapies. We will work flexibly to make sure representation is sufficient within resource available.
Findings	As illustrated by our recommendation on clinical governance (**Recommendation 4**), multidisciplinary input helps provide a comprehensive overview of a clinical pathway.

Ward of Admission

Recommendation 5	**Trust should ensure that in line with NICE guidance orthopaedic trauma patients are admitted to an orthopaedic ward. Where this is not possible, outlying patients (other than those who are medically fit for discharge) should be seen daily by senior medical and nursing staff appropriate to their clinical needs.**
Findings	The proportion of hip fracture patients admitted to an orthopaedic ward within 4 hours of admission to ED is extremely low at 29.7% (**Figure 6**), based on the 2019 data used in the compiling of this report. For the 12 months to the end of February 2023, the new key performance indicator KPI 0 shows this figure has dropped to 6%. This is mainly driven by bed capacity, as well as time of admission, and will often mean patients do not receive the early medical attention they need, in an appropriate environment. The REDUCE study shows that having a dedicated ward reduces length of stay, therefore, we have good reason to expect patients will benefit from increasing how many are admitted to the orthopaedic ward. Practice examples from trusts suggest trauma coordinators may help mitigate effects of outlying patients, but there would be limited quantitative evidence available to support this as these roles are not standardised.
Advice	Trusts should use demand and capacity modelling to identify the likely impact on patient flow if bed days are saved, or beds added. Trusts should observe best practices illustrated by the Bradford Teaching Hospitals NHS Foundation Trust case study, York and Scarborough Teaching Hospitals NHS Foundation Trust case study and East Sussex Healthcare NHS Trust case study in the use of trauma coordinators. Trusts should use bed days saved from reducing length of stay and increasing use of day cases to improve timely flow into orthopaedic trauma wards. If still necessary, trusts should consider adding bed capacity where possible. The consequences for outlying patients should also be mitigated by providing daily senior medical and nursing input appropriate to their clinical needs. In particular, the use of trauma coordinators to provide case management is encouraged.
Measurement	Trusts should monitor trends in the percentage of hip fracture patients admitted to an orthopaedic ward within four hours (as evidenced by NHFD), alongside: • bed days saved following improvements to reduce length of stay and day case rates; • time points of changes to practice; • 4-hour wait performance; • patient experience.

Time to Surgery

Recommendation 6	Trusts should manage their trauma service using an automated theatre workload dashboard including prioritisation categories reflecting the nationally recommended time to surgery within NICE, BOAST, and BPT tariff guidance. This will enable trusts, systems and national leaders to: • monitor and respond to real-time fluctuations in the orthopaedic surgical trauma workload and theatre utilisation (locally and nationally); • anticipate potential delays to orthopaedic trauma patient care; • decide what actions are required to bring treatment times in line with national guidelines, referring to the decision tree provided in **figure 13.**
Findings	The variable nature of the trauma workload effectively creates a waiting list that can grow suddenly for injured patients requiring surgery. The capacity needed to meet this demand is difficult to establish and there is currently little data on whether orthopaedic trauma patients receive surgery in line with national guidance. A clear and continuous record of individual cases comparing their time to surgery to those recommended in national guidelines, dependent on their diagnosis, would give a much more accurate picture of capacity needed in the service. Where there is a gross or frequent mismatch between demand and capacity, an increase in static capacity is likely to be required. Otherwise, standard operating procedures need to be in place to treat patients within timescales set out in national guidance on those occasions where the static capacity is exceeded.
Advice	Trusts should use an information system that can record data. Commercial systems can achieve this, and we will also be exploring how best to help trauma services meet their information needs (see **recommendation 9**). The decision support tool in **Figure 13** can assist trusts to assess options. This can be used in discussion with ICS/networks where appropriate i.e., when discussing mutual aid.
Measurement	Trusts will have access to real time information about their own outstanding trauma surgery workload, that can also be collated nationally. Trusts will be able to baseline their current waiting times and the goal should be to meet time standards developed by the BOA Trauma Exchange and illustrated by the case study of Liverpool University Hospitals NHS Foundation Trust. These standards were based on guidance including NICE guidance for non-complex fractures (NG38), and hip fractures. Escalation triggers will be needed for when time standards are not met. As noted in the introduction to NG38, these standards should not just apply to the specified fractures but should be considered as representative for other similar fractures.

Orthoplastic provision for patients with open fractures

Future Work	We will seek support for the development of a separate GIRFT review covering the orthoplastics care of patients with open fractures.
Findings	An exploratory questionnaire has shown that orthoplastics units are not consistently meeting the service standards considered necessary by the British Orthopaedic Association and British Association of Plastic Reconstructive and Aesthetic Surgeons. Issues reported included: • insufficient combined operating lists to provide timely care; • sub optimal practice with respect to patient bypass, transfer and repatriation; • gaps in consultant cover for vascular and plastics, as well as use of consultant staff with a specialist interest in trauma; • and lack of appropriate coordination and oversight of rehabilitation provision for some patients with severe open fractures.

Standardising clinical practice for common injuries

Recommendation 7	**Using a multidisciplinary governance approach, trusts should run a quarterly baseline audit of recommendations relevant to orthopaedic trauma patients. Relevant NICE, GIRFT and BOAST recommendations should be reviewed and either implemented in collaboration across ICSs, where necessary, or non-implementation justified – see below for existing guidance and GIRFT advice.**
Findings	Throughout the deep dives, we observed variable implementation of NICE and BOAST guidance based on a review of key NICE and BOAST recommendations at deep dives. These recommendations and our advice with respect to them are supported by a 'Standards and Guidance Register'. See Appendix 3, p100.
Advice	This can then be considered by the Medical Director, and Integrated Care System (ICS), to identify ways to address any barriers to implementation at trust or system level. Governance and audit meetings for the orthopaedic trauma pathway should be used to justify to the quality committee the reason why some of the guidance is not being implemented (i.e., because they have something more effective in place).
Measurement	Trusts should evaluate whether their practice is in line with relevant NICE, GIRFT and BOAST recommendations on a quarterly basis. This could involve recording: • Current activity relevant to the recommendation. • Actions needed to meet the recommendation deadlines. • Names of responsible leads. Baseline assessment tools are available for NICE Guidelines. The BOA and OTS are jointly developing an audit tool to support trusts to review relevant recommendations.

Existing Guidance	GIRFT advice
NICE CG124 recommendation 1.6.7 on use of extramedullary implants	Surgeons should ensure appropriate use of extramedullary implants as part of evidence based surgical practice.
NICE NG38 recommendation 1.3.1 on use of Biers block when reducing dorsally displaced distal radius fractures in adults.	Trusts should ensure appropriate use of Biers Block. Multidisciplinary discussion with Emergency Medicine would be useful as initial manipulation takes place in ED.
NICE NG38 recommendation 1.4.6 for surgical fixation of dorsally displaced distal radius fractures in adults.	Surgeons should ensure appropriate use of K-wires as part of evidence based surgical practice.

Imaging

Recommendation	**See Recommendation 7.** Medical directors should ensure that the BOAST guideline below is reviewed and either implemented or non-implementation justified.
Findings	Imaging was a key area where we saw variable implementation of NICE guidance through the deep dives. We recognise there are resourcing issues behind these and would thus encourage trusts to consider what improvements are achievable within current resources.

Existing Guidance	GIRFT advice
NICE NG38 recommendation 1.1.9 on use of hot reporting.	Trusts and systems should ensure the definitive report is available at a time clinically relevant to the patient. • Ideally, as NICE recommends, via hot reporting in ED. • Alternatively, reporting should happen before or at the virtual or face to face fracture clinic.
NICE NG38 recommendation 1.2.3 on use of MRI as first line imaging for Scaphoid fractures	Trusts and systems should increase use of MRI as first line imaging for suspected scaphoid fractures. We recognise MRI capacity is a limiting factor in achieving this and would encourage trusts and systems to increase the use of MRI as first line as capacity allows, in the context of increasing MRI capacity across the system, e.g., following the Mike Richard's review.
NICE NG37 recommendation 1.2.8 on use of whole-body CT scanogram for adult patients with blunt major trauma and suspected multiple injuries	Trusts should increase use of whole-body CT scanogram where this is physically possible. Where it is currently impractical to do so the CT scanner should be repositioned when it is next replaced.
NICE CG124 recommendation 1.1.1 on imaging options for occult hip fracture	Trusts should offer an MRI if a hip fracture is suspected regardless of negative X-rays of the hip of an adequate standard. A CT scan should be considered if an MRI is not available within 24 hours or is contraindicated.
RCR guidance: Standards of practice and guidance for trauma radiology in severely injured patients, Standard 12.	Trusts should ensure that on-call consultant radiologists provide a final report on the SIP within an hour of MDCT image acquisition.

Length of stay

Recommendation 8	**Trusts should ensure that the pathway of care for the older or frail orthopaedic trauma patient is monitored and modified with respect to the 25 organisational factors highlighted in the REDUCE study as important to improving patient outcomes and reducing length of stay.**
Findings	The BOA Standard *The care of orthopaedic trauma in the older or frail orthopaedic trauma patient*[35], states that the care of orthopaedic trauma in the older or frail patient is dependent on coordinated multidisciplinary working to manage the physical injury, co-morbidities and rehabilitation, including measures to prevent further injury. In addition, it reinforces the principle that such care should not be restricted to hip fracture patients but should be applied to all of the older frail. Recent analysis from the REDUCE study shows that several organisational factors can improve patient outcomes, including length of stay. These findings highlight the importance of representation from all teams and departments involved in the multidisciplinary care pathway and admission to an appropriate ward in order to deliver high-quality care to all orthopaedic trauma patients. It would be anticipated that patients with other fractures would benefit in a similar way.
Advice	REDUCE shows organisational factors and best practices can have a particularly significant impact in terms of minimising patients' length of stay and/or reducing mortality. Trusts should audit and adopt these practices as consistently as possible, within current resources. The REDUCE toolkit may also identify a business case for increased staffing, for example to physiotherapy provision at weekends. The practices identified by REDUCE includes: **Pre-operative stage** • Admission to a dedicated fracture ward. • Proportion of patients given a nerve block (with suitable fracture pattern). **Operative stage** • Protocols in place for intra-operative care bundle. • Patients receiving surgery within 36 hours of admission. • Anaesthetic lead for fracture care with time specified in their job plan. **Post-operative stage** • Patients mobilised the day after surgery. • Falls assessment during admission. • Orthogeriatric support time by a specialist nurse. • Prompt assessment by an orthogeriatrician within 72 hours of admission.
Measurement	Trusts should monitor trends for the following outcomes in hip fracture patients before and after improvements to the organisational factors, using the NHFD where applicable: • Length of stay • Readmissions • Mortality • EQ-5D (if available)

[35] *British Orthopaedic Association. BOA Standard: The care of orthopaedic trauma in the older or frail orthopaedic trauma patient. 2019. Retrieved from: https://www.boa.ac.uk/static/a30f1f4c-210e-4ee2-98fd14a8a04093fe/boast-frail-and-older-care-final.pdf*

Staffing

Recommendation	**See Recommendation 7**. Medical directors should ensure that the BOAST guideline below is reviewed and either implemented or non-implementation justified.
Findings	In addition to the fluctuations in staffing levels and the make-up of teams between weekdays, nights, and weekends, there are some general shortages of staff in particular specialties involved in the patient pathway. Specifically, these shortages are most commonly found amongst: radiographers; orthogeriatricians; and operating theatre scrub staff with experience in orthopaedic trauma. The Covid-19 pandemic has exacerbated staffing issues, and evidence suggests 25% of surgeons aged over 50 were considering bringing their retirement date forwards.

Existing Guidance	GIRFT advice
BOAST care of the older or frail orthopaedic trauma patient, point 1	Trusts should ensure there are explicit pathways providing multidisciplinary support for frail orthopaedic trauma patients in the perioperative period 24/7. To achieve this, trusts should review staffing arrangements for the orthopaedic trauma pathway. This should consider how best to use existing staff resources across all divisions.

Orthopaedic trauma information systems

Future Work	Working with the BOA/OTS we will engage with trauma units and suppliers to identify how best to deliver the information requirements of the orthopaedic trauma pathway. These include: • producing operating lists; • facilitating handovers; • real time information sharing between units and hospitals - collation of national information on time to surgery by diagnosis and overall demand into trauma services; • managing theatres shared with other specialities; • recording clinical interpretations and reports on the same platform as diagnostic images.
Findings	Trusts have met their information needs the best they can by developing or purchasing new systems locally, on a piecemeal basis. As such, most trusts now use multiple systems to manage the care of people with orthopaedic trauma. These systems do not usually communicate well with each other. Furthermore, because different divisions within the same trust will use their own systems, clinical staff will be looking at different 'versions of the truth' about the same group of patients. This is inefficient for the teams providing care and creates patient safety risks. It also prevents collation of national data on time to surgery and demand.

Operative management of ambulatory trauma and provision of day case surgery

<table>
<tr><td>Recommendation 9</td><td>Trusts should ensure that when a surgical procedure is required, and it is clinically appropriate for the patient to be carried out as a day case*, it should be done as a day case.</td></tr>
<tr><td>Findings</td><td>The use of day case surgery in orthopaedic trauma is variable. ‘Held at home’ patients with ambulatory trauma have an unpredictable and varied wait for their surgery, and they are often cancelled on multiple occasions. These patients are likely to be good candidates for day case surgery. The use of day surgery could also extend beyond this group as surgical procedures should be done as day cases whenever it is clinically appropriate to do so. Increased use of day case surgery would improve patient experience and inpatient bed usage.</td></tr>
<tr><td>Advice</td><td>Trusts/ICSs should work to ensure that day case surgery is carried out as default for all orthopaedic trauma cases where criteria for suitability is met, within a clearly defined day case pathway.

*The pathways should be developed based on the National Day Surgery Delivery Pack which states that day case surgery should take place in a dedicated unit or area within the main hospital site, with admission to a dedicated admissions area.

Trauma coordinators, with support from orthopaedic trauma surgeons and anaesthetists, should select patients for day case surgery using the trust’s day surgery operational policy which should consider the following:
<table>
<tr><th>Social</th><th>Surgical</th><th>Medical</th></tr>
<tr><td>Patient must be accompanied to travel home (children should be accompanied by someone other than the driver).</td><td>Surgeon considers the operation suitable to be done as a day case.</td><td rowspan="2">A judgment of patient fitness for day surgery based on evaluation at the preoperative assessment. Some medical conditions would exclude a patient from day surgery.</td></tr>
<tr><td>Patient must have someone to stay with them for 24 hours post discharge.</td><td>Post-operative pain should be able to be managed with oral analgesia alone.</td></tr>
</table></td></tr>
<tr><td>Measurement</td><td>Trusts should aim for all suitable cases to be day cases. As indicators, trusts should benchmark operative wrist and ankle fractures against a:
• 60% zero night stay rate for wrist fractures
• 25% zero night stay rate for ankle fractures</td></tr>
</table>

The need for additional data in ambulatory fracture care

<table>
<tr><td>Future Work</td><td>See our future work with respect to orthopaedic trauma information systems on the need to identify how best to deliver the digital capabilities needed for the day-to-day management of orthopaedic trauma patients and ensure that the necessary data is collected to monitor performance.</td></tr>
<tr><td>Findings</td><td>The orthopaedic trauma service is affected by the gap in data, as is the GIRFT programme, and it is not possible to identify the number of patients presenting with ambulatory trauma. Consequently, we cannot measure how effectively the ambulatory trauma pathway runs by identifying, for example:
• the proportion of patients successfully managed and discharged in minor injury units and EDs;
• the proportion of patients discharged based on triage by a virtual fracture clinic;
• the number of outpatient consultations per patient;
• the proportion of patients receiving surgery;
• and in particular, the patient experience.

There would be value in having access to the insights described above as there is currently no consensus on what model works most effectively.</td></tr>
</table>

Litigation

Recommendation 10	Trusts should reduce litigation costs using the GIRFT programme's five-point plan and by addressing common causes of litigation in orthopaedic trauma with respect to limb injuries, common interventions, such as plastering and splint application, and use of intraoperative tourniquets.
GIRFT five-point Plan	a. Clinicians and trust management to assess their benchmarked position compared to the national average when reviewing the estimated litigation cost per activity. Trusts would have received this information in the GIRFT 'Litigation data pack.'
	b. Clinicians and trust management to discuss with the legal department or claims handler the claims submitted to NHS Resolution included in the data set to confirm correct coding to that department. Inform NHS Resolution of any claims which are not coded correctly to the appropriate specialty via CNST.Helpline@resolution.nhs.uk
	c. Once claims have been verified clinicians and trust management to further review claims in detail including expert witness statements, panel firm reports and counsel advice as well as medical records to determine where patient care or documentation could be improved. If the legal department or claims handler needs additional assistance with this, each trusts panel firm should be able to provide support.
	d. Claims should be triangulated with learning themes from complaints, inquests and serious untoward incidents (SUI)/serious incidents (SI)/ patient safety incidents (PSI) and where a claim has not already been reviewed as SUI/SI/PSI we would recommend that this is carried out to ensure no opportunity for learning is missed. The findings from this learning should be shared with all front-line clinical staff in a structured format at departmental/directorate meetings (including Multidisciplinary Team meetings, Morbidity and Mortality meetings where appropriate). The staff groups involved in these meeting will need to grow beyond trauma and orthopaedics to include: orthogeriatrics, anaesthetics and peri-operative medicine, nursing and allied health profession (AHP) staff, emergency medicine and radiology.
	e. Where trusts are outside the top quartile of trusts for litigation costs per activity GIRFT will be asking national clinical leads and regional improvement teams to follow up and support trusts in the steps taken to learn from claims. They will also be able to share with trusts examples of good practice where it would be of benefit.
Common causes of litigation in orthopaedic trauma	a. Trusts should ensure that clinical staff use standard neurovascular observation record charts for limb injuries whether in patients notes or part of the electronic patient record. These should include a clear description of the examination performed to ensure consistency in approach through the patient pathway.
	b. Trusts should ensure that they avoid incidents from common interventions, such as plaster or splint application, by implementing shared learning of those performing these interventions across different departments to ensure a consistently high performance of intervention regardless of point in care pathway.
	c. Trusts should ensure that BOAST guidance on 'the safe use of intraoperative torniquets' is followed.

Future work: Multidisciplinary input into this workstream

- It is important that this workstream models the collaboration we are asking trusts to achieve. Moving forward, therefore, GIRFT orthopaedic trauma workstream will draw on additional support from GIRFT clinical leads and advisors from other specialties and professions. This will include geriatrics, perioperative medicine, emergency medicine, radiology, nursing and therapies. We will work flexibly to make sure representation is sufficient within resource available.
- We will seek support for the development of a separate GIRFT review covering the orthoplastics care of patients with open fractures.

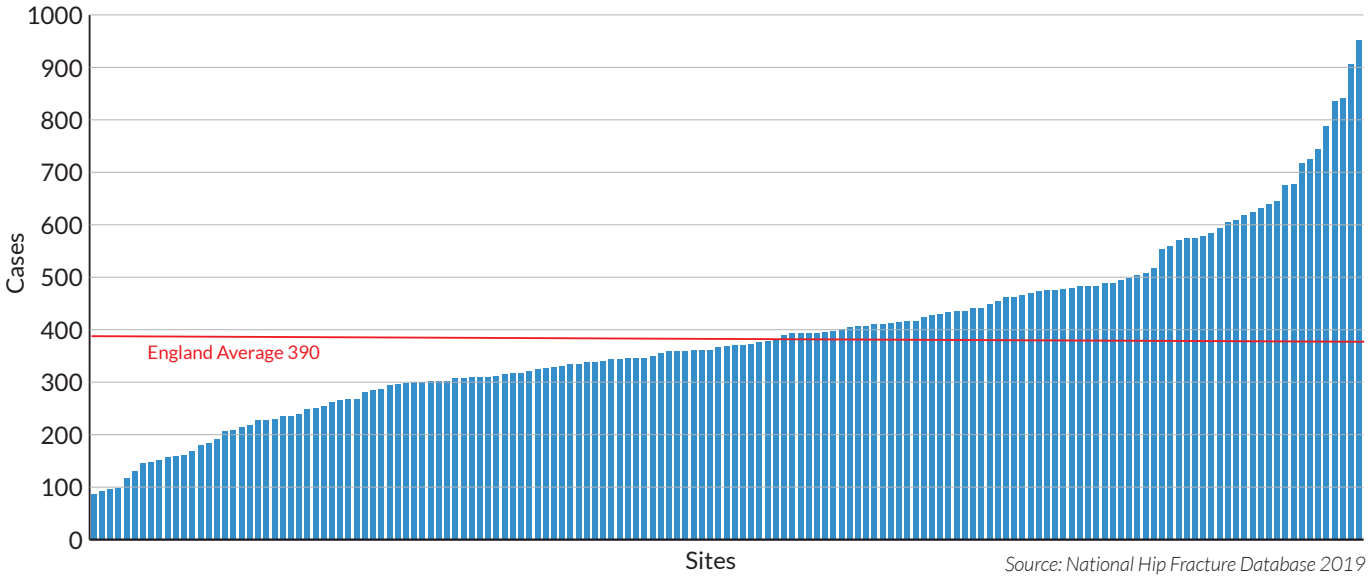
Adult orthopaedic trauma services today

At their core, adult orthopaedic trauma services care for adult patients with injuries to the musculoskeletal system. The areas of focus include fractures, dislocations and ligamentous injuries. While musculoskeletal injuries may occur in isolation in an otherwise healthy person, in patients with pre-existing health problems (or associations with frailty), injuries may be multiple and not confined to the musculoskeletal system. Consequently, as an admitting specialty, orthopaedic trauma has patients with a wide range of problems under its care, requiring collaboration throughout.

The terminology relating to surgery on the skeleton can be a little confusing. The overall specialty title for surgeons operating on bones and joints is that of Trauma and Orthopaedics (T&O). The day-to-day practice falls into two broad groups: one being called elective, planned or scheduled surgery; and the other orthopaedic trauma surgery (sometimes just trauma surgery).

A fracture (i.e., a broken bone) occurs when the mechanical force on the bone is greater than it can bear. The normal bone of a young adult will require significant force to break and is often associated with higher energy mechanisms – for example, sports or road traffic collisions. This is often the image the lay person has of 'trauma'. However, the greatest burden on NHS inpatient services comes from low-energy mechanisms such as a fall from standing height, when the bone is already vulnerable because of general frailty, osteoporosis, or other underlying disease process. Hip fractures in the older patient are very common, with around 70,000 admissions per year. Many aspects of their treatment are well documented by the National Hip Fracture Database (NHFD), consequently they provide an excellent window through which to observe the functioning of an orthopaedic trauma service. The number of hip fracture admissions varies considerably; **Figure 1** shows this by admitting units for 2019. Where patients are treated equitably on the basis of their clinical need, hip fractures may give an indication of the functioning of the whole service. However, where hip fractures are treated preferentially it is more difficult to draw general conclusions.

Figure 1: Number of hip fracture admissions 2019



Source: National Hip Fracture Database 2019

Within acute services providing care in both inpatient and outpatient settings, adult orthopaedic trauma care has some particular challenges:

1. **Team membership is not consistent:** generally, there is a 24/7 on-duty core orthopaedic trauma team of consultants, and middle grade and junior doctors. This is no longer 'firm' based with each clinician working on their own rotas, which means that the same team of individuals may seldom work together. Other disciplines which contribute to patient management may only have a presence for a proportion of the day or week. In this context, the importance of standardising behaviours and practice is evident, as is the value of long-term members of staff being available to support those on shorter attachments (particularly the ward-based junior doctors).

2. **Patients are frequently admitted to a ward other than that designated for orthopaedic trauma:** most acute hospitals run near full capacity, with the majority of orthopaedic trauma patients presenting at a time when they are most likely to move to a ward from ED late afternoon, evening or night. Consequently, many remain in ED or are initially an 'outlier', which is the term used to describe a patient on the wrong ward. This makes the patient's first steps on their pathway of care uncertain and separates them from some members of the team who are best suited to treat them.
3. **Data on outpatient care is more limited and more variable in quality (as seen in several medical specialties):** most fractures can be managed without the need for admission to hospital or any surgical procedures. The coding of these is less reliable than for inpatients, and consequently the overall numbers of some injuries such as wrist fractures, ankle fractures or clavicle fractures which the trust manages are uncertain.

Many aspects of inpatient orthopaedic trauma services have improved considerably over recent years. This is consequent of a virtuous circle of available data, guidelines and the combined engagement of clinicians and management. For hip fractures, this circle is based on the NHFD, National Institute for Health and Care Excellence (NICE) guidelines and Best Practice Tariff (BPT). For major injuries, it is based on the Trauma Audit & Research Network (TARN), BPT and a peer review system. The development of major trauma centres has improved care for patients with the most severe injuries.

This report aims to build on these successes to date by reducing unwarranted variation across the whole breadth of orthopaedic trauma pathways. Critically, our aim is to do this regardless of the type of fracture a patient experiences and, in doing so, ensure trauma care is more equitable. We should provide best practice where it exists. This report documents a range of unwarranted variations across the breadth of that pathway; identifying several areas for providers and systems to improve. We recognise this is ambitious.

A main priority for this report is improving clinical governance to enable continual improvement across the pathway, prioritised as necessary based on the data locally available. As part of this work, we undertook deep dives with 126 trusts to understand in more detail the challenges and opportunities they face around orthopaedic trauma. A common theme throughout the deep dives has been the clear need for multidisciplinary governance of the whole pathway, as it operates for patients with any fracture 24/7. We have seen wide variation in how effectively colleagues from the range of disciplines involved in care of the orthopaedic trauma patient communicate and collaborate with each other to deliver, monitor, govern and improve the pathway. Reflecting this, we have seen wide variation in how consistently units follow the NICE and the British Orthopaedic Association (BOA) guidance, as well as in length of stay, time to surgery and ward of admission. All consultants involved in the delivery of orthopaedic trauma care, regardless of specialty, should contribute to the governance of this pathway, for which there should be clear executive support.

We hope this report provides illustration of how multidisciplinary governance can work well, and highlights governance arrangements that can be used. By achieving this, we expect providers and systems will be more responsive to best practice guidance and reduce unwarranted variation. This includes both the guidance pointed to in this report, and others that are identified in future (usually by providers and systems themselves). As we have conducted this review, we have become optimistic that Integrated Care Systems (ICSs) can help resolve patient flow issues seen in the pathway and have been conscious of the separation of emergency and elective provision underway to support recovery. We have also seen the need to replicate pathway improvement approaches seen for high volume, low complexity elective care. We are confident that now is an apt time to broaden improvement in orthopaedic trauma care by bringing multidisciplinary teams together to create a better pathway for patients.

Policy

The NHS Long Term Plan[1] supports the general principle of separation of emergency and elective activity, commonly described as splitting into hot sites for acute and urgent care, and cold sites or surgical hubs for elective care. This has resulted in a programme to implement elective hubs within the wider GIRFT programme. The purpose of this split is to ensure that elective work continues regardless of the pressures on the system. This intention predates the Covid-19 pandemic. The pandemic has accelerated changes both because of the short term need to separate screened and unscreened patients to prevent transmission of the coronavirus, and also to address more effectively the increasing elective backlog. When applied appropriately, there is the potential for all to benefit from this approach. By providing emergency and elective care on separate sites, the risk of cancellation of elective care is reduced and the elective patient can be managed by the team and in the environment best suited to their needs. Similarly, orthopaedic trauma patients should have access to the clinical team and environment best suited to their needs. Intentionally this limits the ability to cancel elective work to manage surges in unplanned activity. Considering this, there is now a need to ensure that hot sites operate with sufficient spare capacity to manage inevitable fluctuations in demand. This report will consider approaches to achieving this.

The NHS Long Term Plan committed the NHS to improving falls and fracture prevention. This work began in the former Best MSK Collaborative and is now being supported by the GIRFT programme; secondary fracture prevention is a key component of this work. The first step in the secondary fracture prevention is the consistent identification of the initial low-energy or fragility fracture and referral to a fracture liaison service. These initial fractures occurring at any of a variety of sites including; wrist, pelvis and spine are frequently sustained in a low-energy fall which may be a warning that the patient is at risk of sustaining a potentially preventable further fracture at a later date such as to the hip. Orthopaedic trauma services may be involved in this pathway either early on in identifying low-energy or fragility fractures or later in dealing with the consequences of secondary fractures.

[1] *NHS. The NHS Long Term Plan. 2019. Available from: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf*

The scope of this report

The review examines unwarranted variation in the pathways of care of adult orthopaedic trauma patients. This care is inherently multidisciplinary. Within the acute hospital it may involve some or all of the following: ED; fracture clinic staff; plaster technicians; inpatient ward staff; physiotherapists; occupational therapists; trauma and orthopaedic surgeons; anaesthetists; theatre staff; orthogeriatricians; radiologists; and it is likely there are more. Additionally, many patients will have been seen by pre-hospital services, require the continuing input of rehabilitation services or be discharged to care facilities other than their own home. We invited colleagues from across the multiple hospital disciplines on the pathway of care described above to attend the deep dives. There was clear variation between the trusts in how well the multiple disciplines constituting the pathways worked together. We would encourage all trusts to reflect on how they foster multidisciplinary working; to enable maximum and equitable benefits from local resources and provide a structure able to respond to new challenges.

The range of orthopaedic trauma injuries and the variety of environments in which these injuries are managed is vast, extending beyond the bounds of secondary care, including prehospital care, minor injuries units, and other community services. Prehospital services and community rehabilitation provision have not been considered as part of this report and the providers of the services were not specifically invited to the deep dives. This review also does not specifically consider orthopaedic trauma in children, as this is a component of the GIRFT national report for paediatric trauma and orthopaedic surgery. This review considered the pathways of treatment for orthopaedic trauma patients within secondary care. To identify where such care is delivered, we chose to use the submission of data to the NHFD as an indicator. However, it should be noted that the review did not confine itself to the management of hip fractures.

Major Trauma Centres (MTCs) are a subset of units returning data to the NHFD. MTCs are a significant feature in the provision of orthopaedic trauma care. This review has made some important and relevant observations which highlight issues and variations. It was not part of the remit to consider the generality of major trauma services within this review. Since their inception, the MTCs have improved survival outcomes as recognised in the NHS Long Term Plan. A system of national peer review has been in place during this time but will change with the introduction of integrated care systems (ICSs). However, considering the management of open fractures, the provision of trauma orthoplastic services is integral to an appropriate level of care. We feel it sufficiently important that attention is given to this area with the conclusion that a specific and greater in-depth review is carried out.

Audience and purpose

The purpose of this report is to improve the care of orthopaedic trauma patients. There is a wide range of practitioners who may be involved in the care of the injured from the moment of injury to the completion of rehabilitation. This report relates to the component of that pathway under the control of the acute secondary care provider. Thus, it will be of relevance to ED emergency departments and minor injuries units, trauma and orthopaedic surgeons, anaesthetists, orthogeriatricians, radiologists, nursing staff (in clinics, wards and operating theatres), physiotherapists, occupational therapists, management and trust executives. The report's relevance will also extend to systems when covering issues like theatre capacity, as solutions may be found locally by considering all the available resource across a system.

A key step in understanding the structure of this report is that it should be seen as being centred on the orthopaedic trauma patient and not the orthopaedic trauma surgeon. Consequently, the active involvement of all those on the pathway of care of these patients is sought and is necessary for sustained and evolving improvement.

As noted previously, the range of orthopaedic trauma conditions is wide, and the recommendations made in this review will at times be specific. However, it is anticipated that the professionals involved in care will ensure that there is an equitable application of the principles outlined to all patients with similar needs. As the patient should be at the centre of such considerations, their needs should take priority and the professionals involved should act to ensure that the silos and compartmentalisation of managerial and clinical structures do not prevent this.

Methodology

The analysis in this report is based on the GIRFT programme model, which aims to identify unwarranted variation in practice and outcomes. We used a number of data sources to understand where unwarranted variation exists across the system. This consisted of a questionnaire, which we sent out to all NHS providers, deep dives and national best practice guidelines such as NICE and British Orthopaedic Association Standards (BOAST).

The data packs were developed by using Hospital Episode Statistics (HES), National Hip Fracture Database (NHFD) and the Trauma Audit & Research Network (TARN) data as these are the only robust national data available to measure trauma activity across England. This provided a better understanding of the national context and allowed us to benchmark each trust's performance to national data. From these datasets, we chose to explore areas of practice where there is national or professional consensus in how care should be delivered.

In addition to this, we conducted virtual deep dives with trusts via Microsoft Teams to further discuss the key themes explored in this report and to understand in more detail the challenges and opportunities they face in orthopaedic trauma care. To date, there have been 67 well attended virtual deep dives carried out with a range of providers across England and a number more are in the diary.

As a precursor to the deep dive, a questionnaire was developed and sent out to local orthopaedic trauma teams and networks to understand the way in which each unit operates, their performance and outcomes. The questionnaire was designed to capture information, particularly on areas of care where there is a lack of national data. This allows us to see how resourcing fluctuates throughout the week and along the pathway. The data is used as part of the deep dive process along with the data pack. It has also been analysed to provide an evidence base for some of the themes in this report.

During the deep dives, we discussed variations in practice and how each trust stands in relation to their peers. These discussions have informed our findings and recommendations.

Data quality and metrics

Hip fractures are very common in older patients and the treatment of them is well documented by the NHFD. As a result of this and due to the lack of robust data relating to other types of fractures, we have used hip fracture data as a proxy measure for orthopaedic trauma care where possible.

Although this provides a good picture of performance where patients are treated equitably according to their clinical need, it is more difficult to draw general conclusions where hip fracture patients are treated preferentially.

Data sources

In addition to the GIRFT questionnaire data, we have drawn from a range of national orthopaedic trauma data to understand where unwarranted variation exists nationally. We extracted data from the Trauma Audit & Research Network (TARN), Hospital Episode Statistics (HES) for the financial year of 2018/19, NHFD data from the same calendar year, and where appropriate, we used real-time updates from 2022/2023.

To supplement our findings, we extracted data from the REDUCE study, which looked at admissions and hospital data to understand regional variations in the costs of treating hip fractures. We also conducted two additional surveys to identify which trauma systems are currently being used across different providers and to examine how different orthoplastic units function.

Gaps in our analysis

As aforementioned, there is a lack of data concerning a number of fractures. As a result of this, we have had to refer to hip fracture data as a proxy measure for the performance of the orthopaedic trauma system where possible.

Deep dive summary

During the introduction to each deep dive, it was explained that the focus of the whole exercise was to be the orthopaedic trauma patient and not necessarily the orthopaedic trauma surgeon. Most patients have a number of steps on their pathway of care and for the journey to be completed, these steps need to join up. It was also noted that some patient groups (such

as those with a chest injury) do not fit neatly onto any pathway and these were termed 'orphan conditions'; the implication being that often no single specialty was keen to take responsibility for their care. Hence, they may fall between established pathways.

As part of the deep dives, the distinction between specific objectives and a more general approach was drawn. This could be likened in military terms to the distinction between tactics and strategy or, as in the deep dives, illustrated with a picture of the Titanic, the comparison between rearranging the deck chairs and steering the ship. In the deep dives, this distinction seemed to be understood and practiced best by those units where there was collaborative cross-disciplinary work under the umbrella of active involvement and interest at a senior enough level to bridge those various disciplines involved. In some other units there was less evidence of cross disciplinary collaboration or strategic direction.

Another key theme was equity. It would seem to be axiomatic that within a single trust, patients with similar needs should be treated in a similar fashion as far as is possible. This should be the professional responsibility of those in a position to influence such matters. There was clear unwarranted variation with regard to equity of care.

The deep dives inform the entirety of this report, including the themes, findings and recommendations.

Impact of Covid-19

The Covid-19 pandemic naturally had a significant impact on the practice of orthopaedic trauma. There were some fluctuations in the prevalence and the nature of injuries sustained, reflecting the changes in activity of the population during the period of restriction of personal freedoms and general alterations in behaviour. However, while this led primarily to fluctuations in the presentation of higher energy trauma, the commonest injuries consequent upon a fall have continued unabated. A low-energy injury is defined as one which follows a mechanism no greater than that equivalent to a fall no greater than standing height.

There were changes in the management strategy particularly during the early stages of the pandemic. Most low-energy fractures requiring admission are in the older or frail patient and there was naturally a desire to protect these patients from a hospital environment where there may be increased potential for Covid-19 transmission. However, the management of many of these injuries requires surgical intervention, therefore, admissions continued but with many variations to local practice to accommodate the actual and potential consequences of Covid-19 in acute units. Consequently, first contact with patients was arranged to bypass emergency departments in many institutions. Fracture clinic face-to-face attendances were minimised. Surgery, when required, was slowed and hampered by the need for the use of personal protective equipment and protective protocols.

The consequences of the Covid-19 pandemic on orthopaedic trauma care have evolved, and indeed there may be unforeseen ramifications to come. The initial crisis of the reality or the potential for large numbers of acutely unwell patients has subsided, but we are now in an environment with a huge elective backlog, a tired workforce, and low resources. It seems clear that it will require significant efforts to maintain our ability to provide adequate acute care alongside the desire to catch up with elective work.

The questionnaire for the deep dives was modified in an attempt to gain some further information related to the pandemic. During the deep dives there has been some further discussion of the consequences of the pandemic. In essence, practice seems to have returned to its pre-pandemic structure but is now under greater pressure. The pandemic has accelerated the establishment of elective surgical hubs, or 'hot/cold sites'. This should allow both elective and acute patients to be dealt with in an appropriate environment by teams prepared for the problems that they will face. However, an effect for the acute sector is that surge capacity, previously provided by the cancellation of elective work carried out on the same site, has been reduced.

Equity of provision

There is significant variation in the care provided to an orthopaedic trauma patient. This variation may be the result of the conscious policy decisions of a whole unit or of individual practitioners. This variation can be explored with constructive discussion. However, there is a lot of unintended variation due to factors such as:

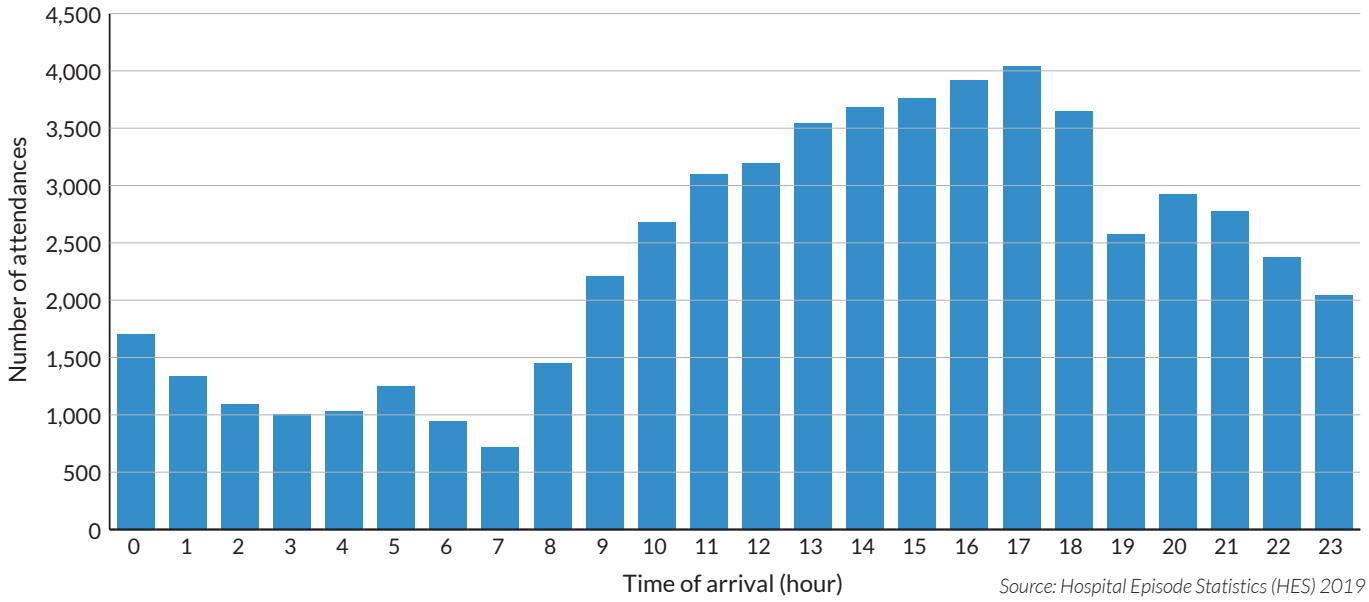
- the time or day of admission;
- the availability of personnel required for the pathways to function;
- the willingness and application of collaboration between the necessary personnel on the pathway;
- prompt admission to the orthopaedic ward;
- type of injury, in particular whether that fracture type is monitored;
- availability of and access to a fracture liaison service; and
- fluctuations in workload.

To address this variation in provision of care, the quality committee should have mechanisms ensuring that BPT criteria, and NICE, GIRFT, and BOAST recommendations and similar clinical guidance are applied to all of the clinically relevant orthopaedic trauma patient cohort, and not just the patient cohort referred to in the guidance. The quality committee is tasked by the board with assuring all aspects of quality and safety of clinical care, including regulatory standards. This remit is often augmented with additional areas such as risk, workforce, service user or patient engagement, research and development, information performance and communication.

Time and day of admission

While many orthopaedic trauma conditions can be managed as an outpatient, the number of orthopaedic trauma inpatients remains a great burden on hospitals. The essence of the problem with this group of patients is the pressure of time. The most common group of patients requiring immediate admission are older patients who have suffered a low-energy injury affecting their mobility, and less frequent are the higher energy injuries in the younger patient. **Figure 2** shows that the time of arrival in ED increases during normal working hours, with a peak between 4pm to 6pm. This data correlates to arrival times from the ED, but it will likely be at least 3-4 hours later when the patient is ready to be moved to a ward.

Figure 2. Time of arrival in ED for hip fracture patients 2019



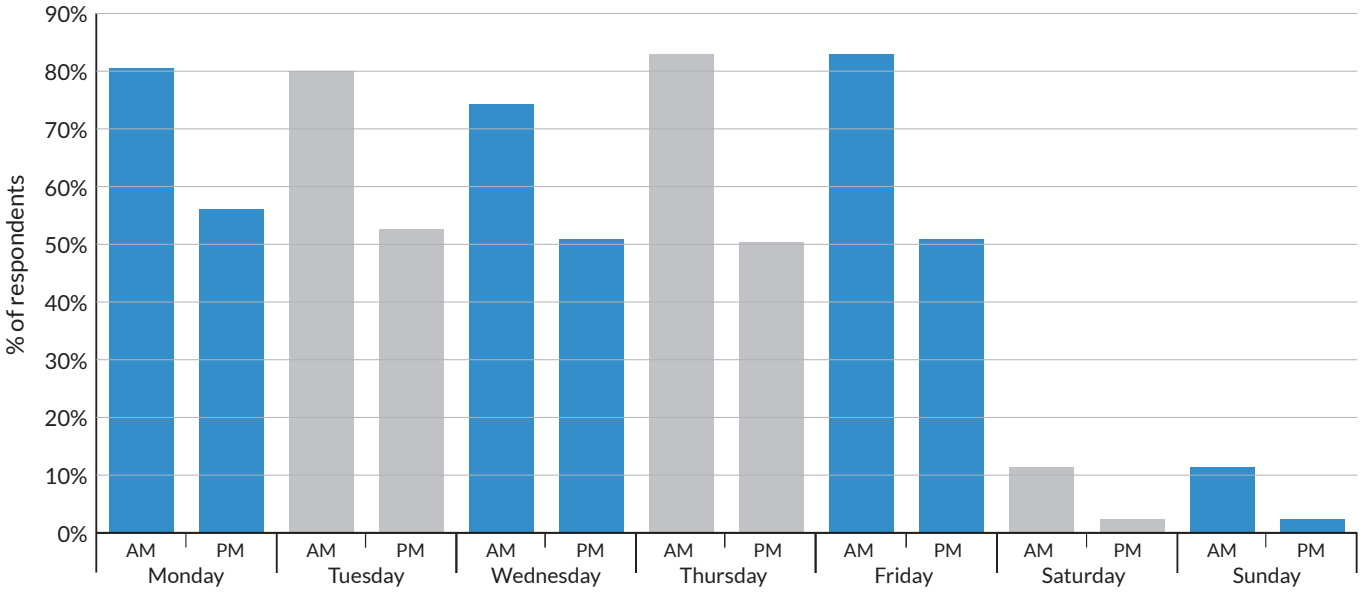
Source: Hospital Episode Statistics (HES) 2019

The availability of personnel required for the pathways to function

There is also marked variation in the staff available to manage the patient depending on the time of admission and on the day of admission because fewer people work in hospitals at night and on weekends. If there was a similar decrease in the amount of work required at these times, then the level of care would be maintained. However, this is not the case, and the remaining workforce is often stretched. Orthogeriatricians, for example, are few in number and it is rare that they provide routine weekend care. Physiotherapy services for mobilising patients are also variable; the provision is often selective such as for hip fractures, day one post-op patients or patients ready for discharge.

Physiotherapy, occupational therapy, radiography and other work undertaken by allied health professions (AHPs) at the weekend may be as part of a regular rota or may be reliant upon staff filling shifts voluntarily. Theatre time is generally more restricted at the weekend and in some trusts the lists are shared with other specialties, which is not recommended by NICE[2].

Figure 3. Routine orthogeriatrician visits provided



Source: National Hip Fracture Database, Facilities Audit 2019

With respect to excessive delay to surgery, it is likely to be those patients admitted on Thursday and Friday that are affected rather than those admitted on the weekend itself. Data collected by the NHFD in **Figure 3** shows that very few trusts (less than 15%) provide routine orthogeriatrician visits during the weekends. When an orthogeriatrician is absent, the acute patient admitted at the weekend may be seen by an ED physician, the orthopaedic team, and an anaesthetist. Consequently, it may be those patients who had surgery on the Thursday or Friday (and who would normally be under the post-operative care of orthogeriatricians) who do not have the benefits of orthogeriatrician specialist input. However, this does not alter the objective that the capability to provide care should not fluctuate according to the day of the week.

One approach that can be taken to address such variation is to increase the available resource over the weekend, bringing weekend care up to the standard of weekday care. Another approach is to spread the currently used resource more equitably over the week. Alternatively, a trust can look at its total resource available at the weekend and use this equitably for all the patients in need at that time. This would likely lead to greater collaboration between surgeons, anaesthetists and physicians in caring for the injured frail.

A further issue is that of outlying patients during part or all of their admission. Some members of the team may follow the patient, but a number tend only to work in one geographic location within the hospital. As many patients are admitted to the ward late in the day or at night, the patient is frequently initially admitted as an outlier and hence dissociated from the appropriate team. If the patient is not admitted to the correct ward, some of the problems may be alleviated by having staff

[2] *NICE (CG124).*

who can travel to the patient when available. This role is usually fulfilled by an advanced nurse practitioner or trauma coordinator; however, their availability is very variable. According to the questionnaire responses, 84.9% of trusts have trauma coordinators. However, we do not have information of their role, or when in the week or time of day they are available.

CASE STUDY

Redesign of orthogeriatric service including daily Trauma Orthopaedics Geriatrics and Anaesthetics (TOGA) meeting

South Tyneside and Sunderland NHS Foundation Trust

At the end of 2014, the trust expanded its orthogeriatric service. Up to that point the service was essentially a liaison model, with a consultant geriatrician visiting the trauma ward around three times a week and no prospective cover. Best Practice Tariff (BPT) attainment reflected this, with dips in prompt geriatrician assessment around periods of leave and weekends. Consultant geriatrician input was increased to mirror that on the geriatric base wards and an orthogeriatrician is now based on the trauma ward from 8am to 4pm on weekdays. There is full prospective cover for leave and an agreement that the on-call geriatrician will see new patients with a hip or femoral fracture at the weekend or on bank holidays (BH). Fragility fracture patients are routinely reviewed on the day of admission, irrespective of injury, including patients without a confirmed fracture, but who are "non-weight bearing" and have hip or pelvic pain following a fall. These patients now follow a defined pathway of care and are admitted under joint care to the trauma ward while awaiting investigations and are also seen over weekends or BH by the on-call geriatrician.

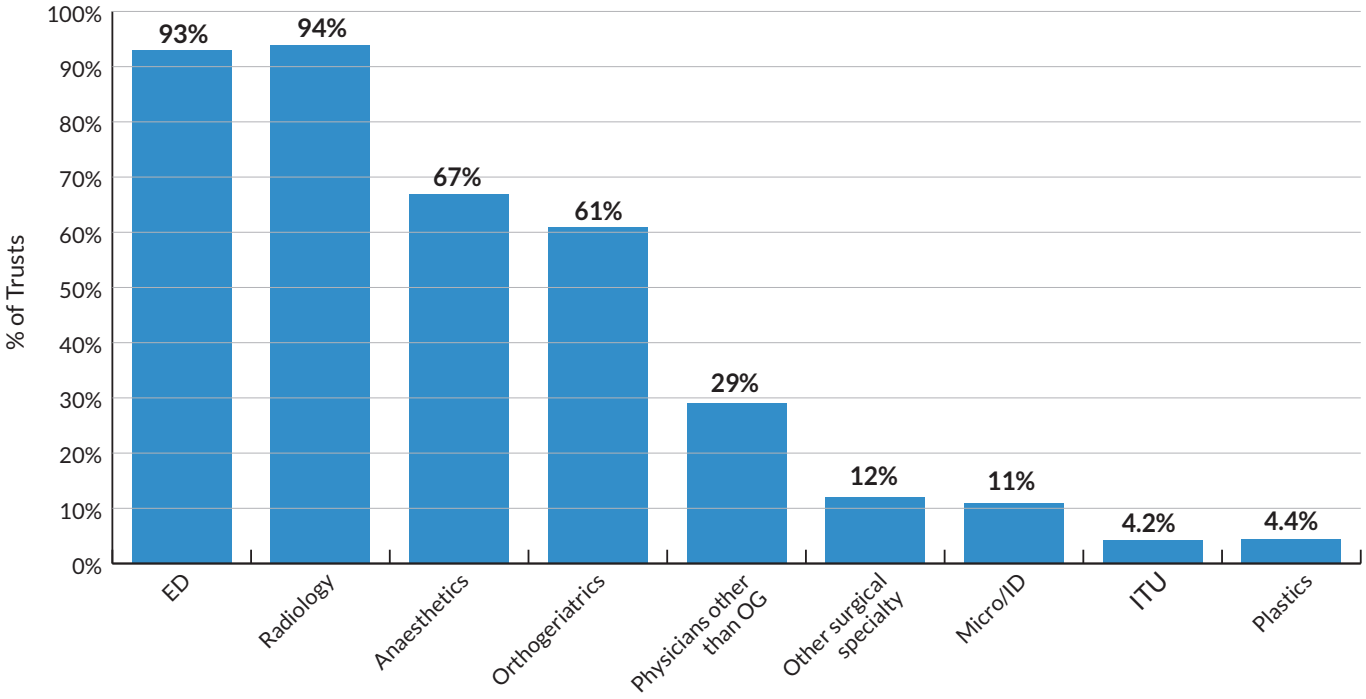
Facilitating higher rates of early surgery was considered a key outcome of service redesign, both to improve patient care and rates of BPT attainment for theatre within 36 hours. To allow routine preoperative geriatric review the orthogeriatric team altered their working hours to start at 8am, meaning they could influence planning of theatre lists and reduce late cancellations. A consultant level multidisciplinary meeting (the Trauma Orthopaedic Geriatric and Anaesthetic, or TOGA, meeting) was instigated in theatres at 0845am Monday to Friday, allowing contemporaneous documentation of decision making around medical co-morbidities, timing of surgery, surgical and anaesthetic planning and escalation of care including resuscitation. The TOGA meeting is now considered so beneficial to improving perioperative care that it now occurs at weekends and on BH without the on-call geriatrician (who is unable to attend due to competing priorities out of hours).

Following these changes geriatric assessment within 72 hours for patients with a hip or femoral fracture has improved to more than 98% for the past five years, with over 90% of patients seen pre-operatively in 2021. The hospital now routinely sits above the top quartile for overall BPT attainment and is regularly in the top ten highest attaining hospitals nationwide for meeting all BPT markers.

The willingness and application of collaboration between the necessary personnel on the pathway

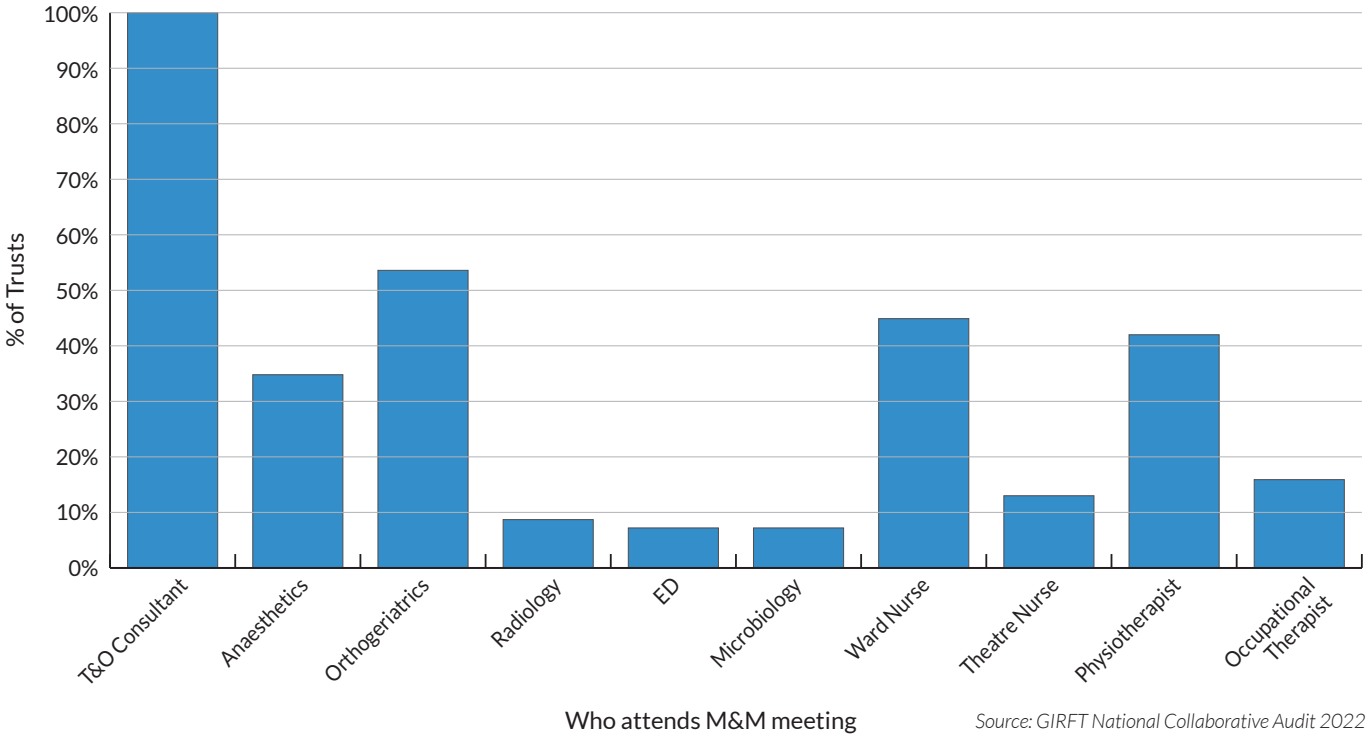
There is a common misconception that the members of a care team will work together regularly and know each other, however, in acute practice this is generally not the case. The duty rotas of the various members who make up the team are not synchronised; many rotas do not cover the whole 24-hour period and the individual members of the team may only be in post for a few months. Consequently, the make-up of the team is almost infinitely variable. Morbidity and Mortality (M&M) meetings are a routine opportunity to discuss adverse outcomes. This is, therefore, an excellent venue for all those involved in the pathway of patient care to learn from problems and to contribute to their resolution. If attendance to this varies, then the benefits of those collaborative conversations are harder to achieve. **Figure 4** shows the variation in the specialties involved in the delivery of care and those attending Orthopaedic Trauma M&M meetings and the GIRFT deep dives. It demonstrates that there is inconsistent routine attendance of specialties at M&Ms and in the overall input of each specialty.

Figure 4a. Specialty clinical input for othopaedic trauma patients



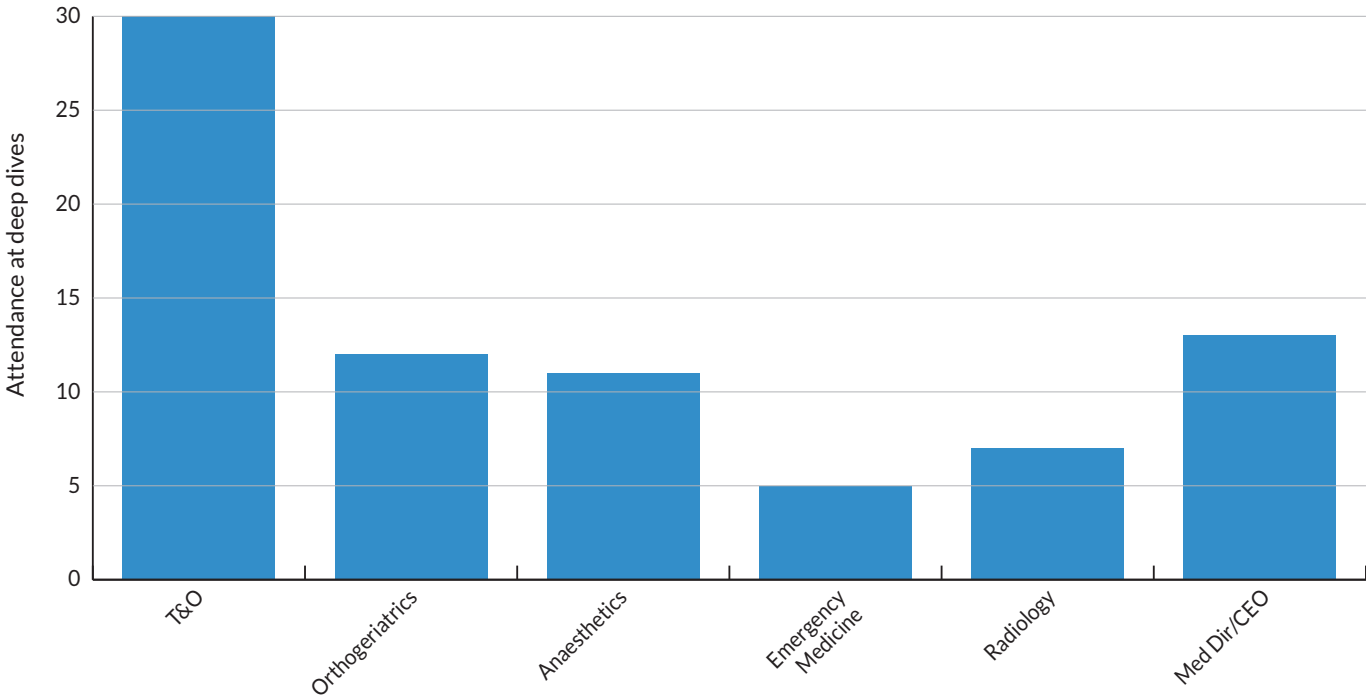
Source: GIRFT Orthopaedic Trauma Services Survey of 1019 patients in 19 units March 2022

Figure 4b. Specialties who routinely attend the Morbidity and Mortality (M&M) meeting



Source: GIRFT National Collaborative Audit 2022

Figure 4c. Specialties who attended the deep dives



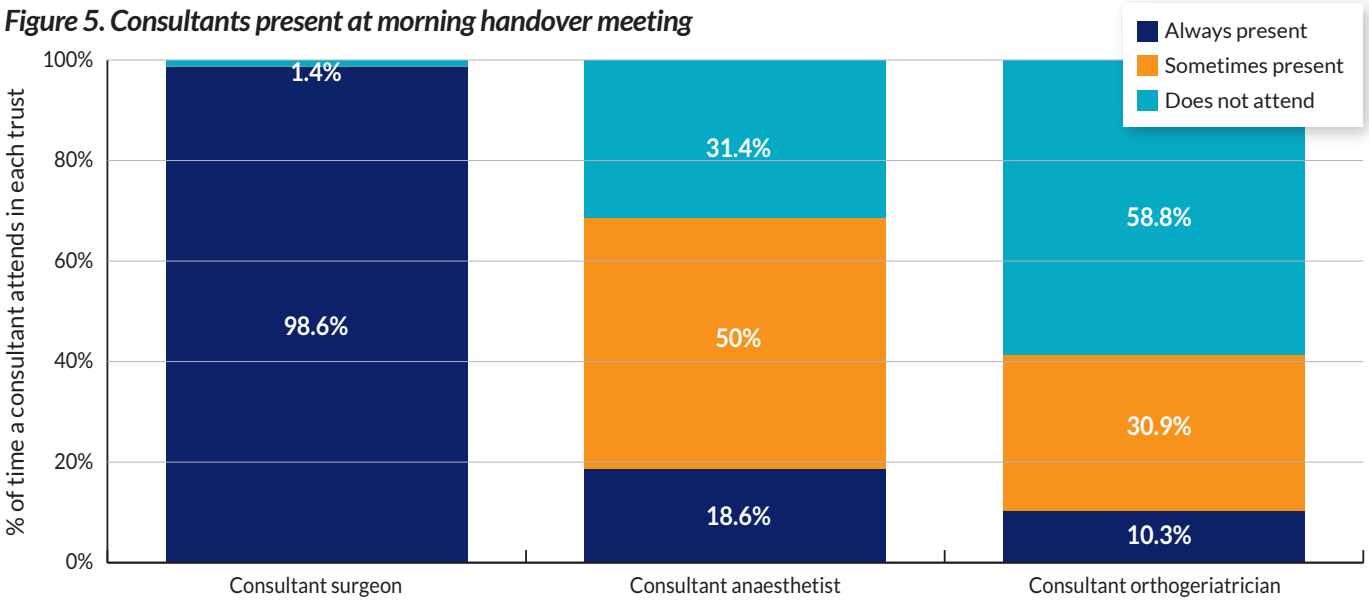
Source: GIRFT Orthopaedic Trauma Deep Dives

As evident in **Figure 4b**, it is normal for a trust's orthopaedic trauma M&Ms to lack input from specialties and staff that are important to the patient pathway. While all trusts reported T&O surgeons attend M&Ms, all other specialties routinely attend at a much smaller proportion of trusts. **Figure 4c** shows a similar pattern for attendance at GIRFT deep dives.

Satisfactory collaborative care seems surprisingly difficult to achieve. Taking the example of chest injuries, the patient may require the input of a very wide variety of specialties; ED, general surgery, general medicine, geriatric medicine, orthopaedic surgery, anaesthetics, pain team, respiratory medicine, intensive care and more. A "named responsible consultant" will be from a single specialty and have responsibility but no authority in relation to those from other specialties. Within any trust, these specialties will reside in different managerial divisions and often the first medical practitioner in that hierarchy with both responsibility and authority covering all of these groups is the medical director. Where this is the case, it seems appropriate that the medical director assumes that responsibility to best use the available resources for the benefit of patients under their care.

When considering how collaborative care can be delivered on a day to day basis for an orthopaedic trauma patient who is awaiting surgery, it is necessary for the specialties involved to meet. It is routine in orthopaedic trauma services to have a morning handover meeting. **Figure 5** shows the attendance at that meeting with the inference for the opportunity for inter-specialty collaboration for individual patients prior to surgery. Consultant anaesthetists are routinely present approximately 20% of the time, and consultant orthogeriatricians are routinely present approximately 10% of the time.

Figure 5. Consultants present at morning handover meeting

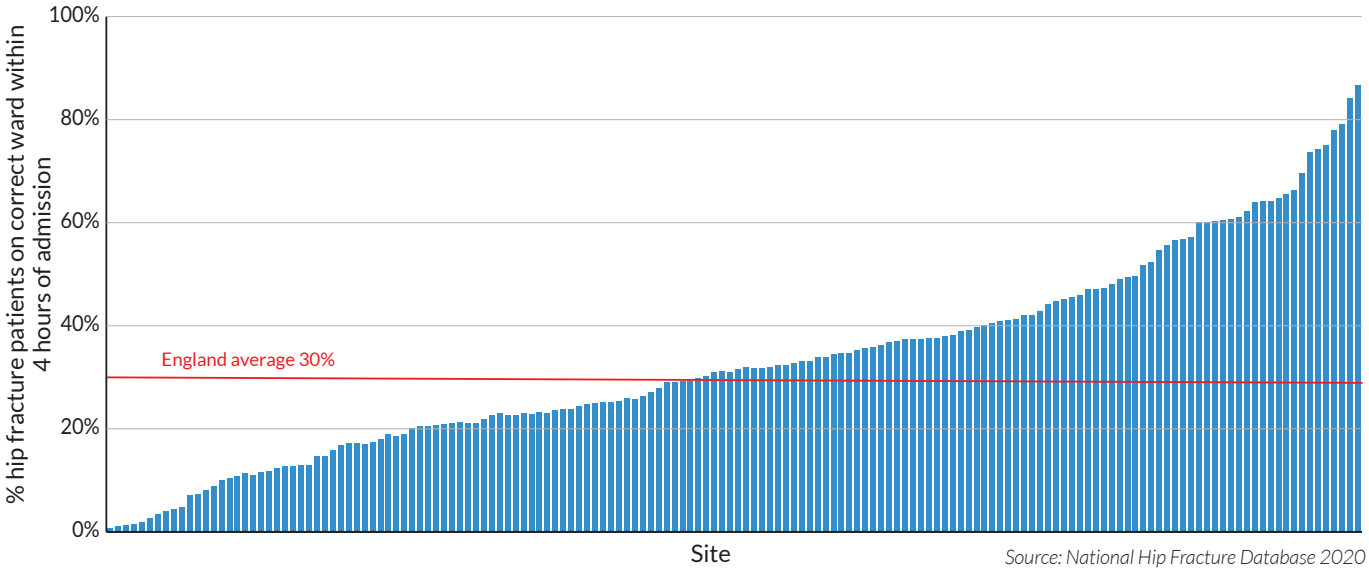


Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

Prompt admission to or attendance at a location where the team can function

One of the great advantages for the NHFD is that hip fracture patients are nearly always admitted, and the great majority have an operation, which means that the data is near complete. This allows clear demonstration of unwarranted variation in patient care, and this is particularly stark in the variation in the number of patients admitted to an appropriate ward within four hours, as shown in **Figure 6**. Data from 2019 shows that an average of just 30% of patients achieved such a target. This has deteriorated and in February 2023 stood at 6%, according to NHFD. Thus, the initial steps on their pathway of care may be in an inappropriate environment. This will make it more difficult to deliver the whole range of appropriate pre-operative care including medical management, setting expectations, beginning discharge planning, and giving the patient the confidence that they are in the correct environment.

Figure 6. Hip fracture patients on correct ward within 4 hours of admission

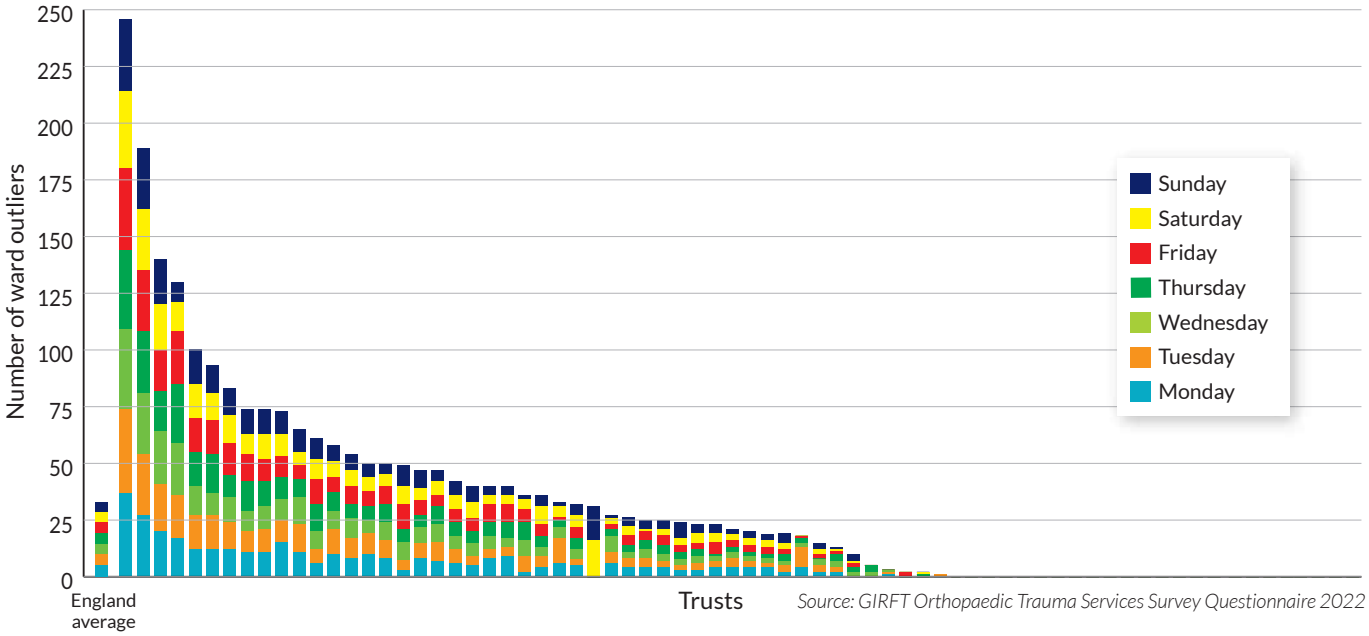


Source: National Hip Fracture Database 2020

The term 'outliers' is used to describe patients who are on a ward associated with a specialty which is not appropriate to the condition or injury they have. There are many ways in which this can compromise management. For those staff who follow the patient (medical staff, therapists) it often creates a physical impediment to routine, frequent review. Other members of the team are often geographically located and do not follow the patient hence outliers will generally not be nursed by staff with an orthopaedic trauma interest.

Figure 7 shows the marked variation in the number of outliers, split by day of the week. Most trusts had between 5 and 75 outlier days in the week prior to them completing the survey, but there were a few trusts with more than 150 outliers. We do not have clear data about whether the outlier days were spent at the beginning or end of the patient journey. However, discussion in the deep dives suggests that the majority of outlier days is in the acute phase.

Figure 7. Number of orthopaedic trauma ward outliers in week prior to survey completion



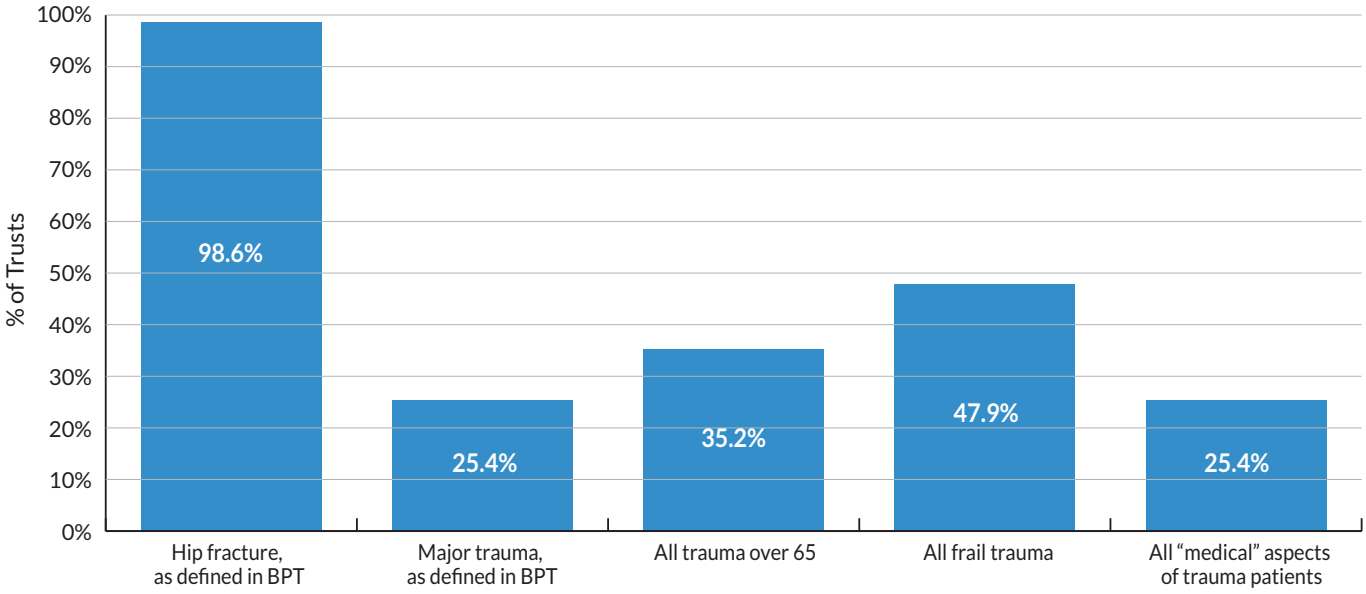
Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

Type of injury

In addition, there is a variation in the priority and the focus for patients depending on the nature of the fracture they have sustained. This frequently results in patients with hip fractures receiving preferential treatment, as it is these fractures that are monitored and have had an associated Best Practice Tariff (BPT). In addition, the NICE hip fracture national guidance describes a pathway of care for these patients, but many do not extrapolate this to the care of other patients with similar needs. The BOAST[3] that previously dealt with hip fractures, now called 'care of the injured frail' since its revision in 2019, describes the equitable multidisciplinary care for patients with similar needs. The high-quality data for hip fractures recorded in the NHFD provides an excellent window through which to view the management of the injured frail. However, this perspective is distorted if management strategies are directed towards achievement of targets rather than equity. The practice for hip fracture patients should allow for a general assessment of the management of those admitted with non-ambulatory fragility fractures, but this is only the case when treatment is equitable. For instance, in many trusts of those frail patients who are admitted with orthopaedic injuries, the orthogeriatricians only see hip fracture patients as a matter of routine (see **Figure 8**) and would usually see other injured frail patients after specific request. This would seem to be a system aimed at achieving more complete BPT returns rather than equitable care.

[3] *British Orthopaedic Association. The care of the older or frail orthopaedic trauma patient. 2019. Retrieved from: https://www.boa.ac.uk/static/a30f1f4c-210e-4ee2-98fd14a8a04093fe/boast-frail-and-older-care-final.pdf*

Figure 8. Which patients do the orthogeriatricians see routinely



Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

Adherence to the BOAST for the care of the older frail orthopaedic trauma patient will help maintain consistent standards. It encourages coordinated planned multidisciplinary working to best manage the injury, the comorbidities and rehabilitation with the available resources whatever the time or day of need. Of particular note is that this is not restricted to a particular anatomical site of fracture but gives equal focus to all those in need. Similarly, there should be equity in relation to the prevention of infection. The BOAST[4] on a fracture related infection highlights the vulnerability to infection of all patients undergoing fracture surgery when implants are used. While there are differences in what can be achieved in the available time for acute and in elective work one of the key statements is that there should be a uniform set of standards for the prevention of implant-related infection in trauma and elective orthopaedic surgery.

Availability of and access to fracture liaison services

A high proportion of patients who have had a fracture are at risk of subsequent (secondary) fractures in the future. The objective of a secondary fracture prevention service is to identify the patients who have had a low-energy fracture (a fracture sustained with an energy no greater than that of falling from standing height) or fragility fracture and take measures, when appropriate, to prevent a secondary fracture[5].

Patients who have had a low-energy fracture should be offered the opportunity to be assessed and advised on preventative measures. However, there is unwarranted variation in whether patients with low-energy fractures are identified as being at risk of secondary fractures and require further assessment. Those best placed to ensure patients receive timely guidance on the pathway of secondary fracture prevention should be those who are aware of patients that have sustained a primary fracture. The responsibility for providing a fracture liaison service (FLS) to manage these patients varies and may not be an individual secondary care trust. The All-Party Parliamentary Group (APPG) on Osteoporosis and Bone Health[6] found that less than two thirds of patients in England have FLS available to them.

An estimated 90,000 people in the UK miss out on access to secondary fracture prevention services, and the assessment, monitoring and follow-up treatments they provide. Expanding fracture liaison services across England could also save £150.1 million annually by 2029/2030*. Given the projected rise in hip fractures, which are expected to more than double by 2060, extending access to these services is essential to reduce pressure on acute care**. **Figure 9** shows current variation in where patients with low-energy fractures are identified for each type of fracture.

[4] *British Orthopaedic Association. Fracture Related Infections (FRI). 2019. Retrieved from: https://www.boa.ac.uk/static/dee7cba7-5919-4f26-a286033fcf46a458/boast-fracture-related-infections.pdf*

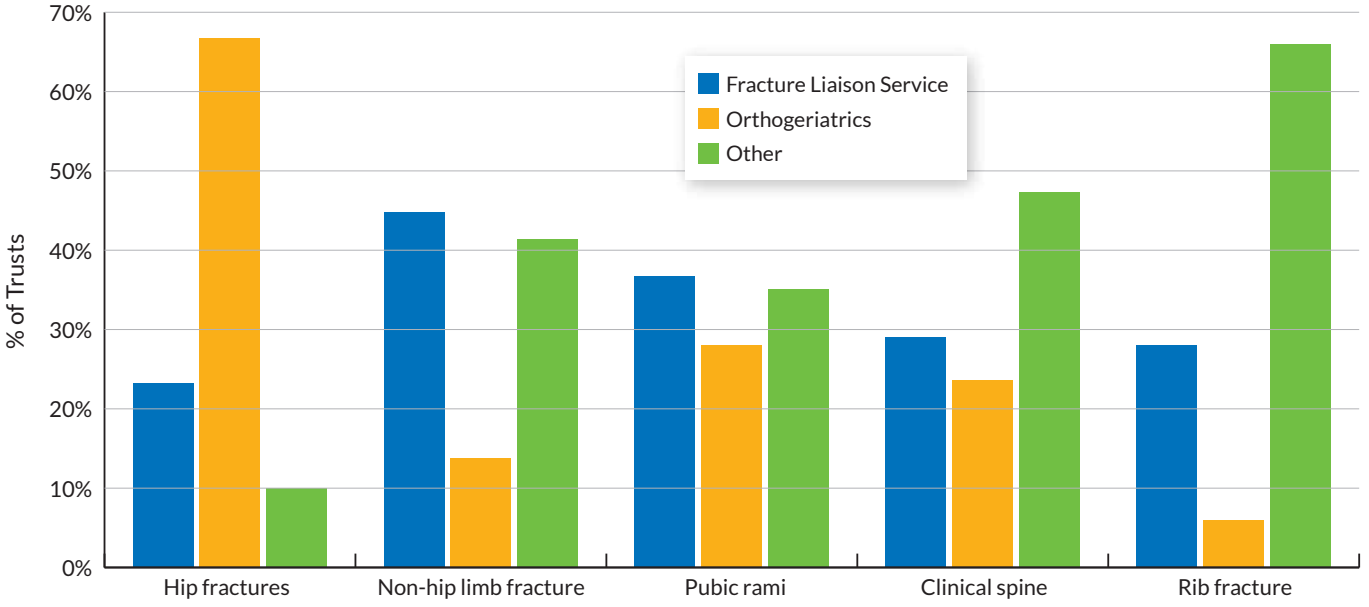
[5] *The Royal College of Radiologists. Radiological guidance for the recognition and reporting of osteoporotic vertebral fragility fractures (VFFs). 2021. Retrieved from: https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfcr215_reporting_of_vff.pdf*

[6] *All-Party Parliamentary Group (APPG). APPG on Osteoporosis and Bone Health: How to end the postcode lottery for access to a quality fracture liaison service. 2021. Retrieved from: https://strwebprdmedia.blob.core.windows.net/media/31tbj2dt/appg-on-osteoporosis-and-bone-health-fls-inquiry-inquiry-report-2021.pdf*

* *Internal analysis by NHS England*

***Hip fracture projections up to the year 2060: an analysis based on data from the National Hip Fracture Database (NHFD) for England, Wales, and Northern Ireland - ScienceDirect*

Figure 9. Which aspects of FLS care for identification are covered by which specialty, service, or department



Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

CASE STUDY

Fracture Liaison Service

Bradford Teaching Hospitals NHS Foundation Trust

The trust uses the service to identify a first fracture, and then assess and treat appropriately, to help prevent future fractures.

The Fragility Fracture Liaison Service has been in place since November 2016. Since then it has captured over 6,600 patients, not including hip fractures patients.

Bradford FLS captures patients in a number of different ways:

- Attendance at daily trauma meetings (or looking at trauma handovers when unable to attend);
- Referral from virtual and face-to-face fracture clinics;
- Other direct consultant referrals;
- Ward referrals;
- A small number of self-referrals;
- Via specialist PACS lists, set up by the radiology department.

Once captured, the trust contacts patients through phone calls and letters. Once contact is made, assessment is carried out using pro-forma developed from information required for fracture liaison service database (FLS-DB) upload, and completion of the Fracture Risk Assessment Tool (FRAX) assessment tool.

Patients are assessed on a clinical basis with reference to local pathway and service specifications, and the KPIs developed by the Royal Osteoporosis Society. Patients are captured regardless of any other factors other than they have had a confirmed fragility fracture.

If patients are assessed as needing to have further investigations, they are referred for bone densitometry scan and blood tests. The trust feeds back results to both the patient and their GP. Patients recommended to start treatment are followed-up at four and 12 months to ensure compliance with osteoporosis medications.

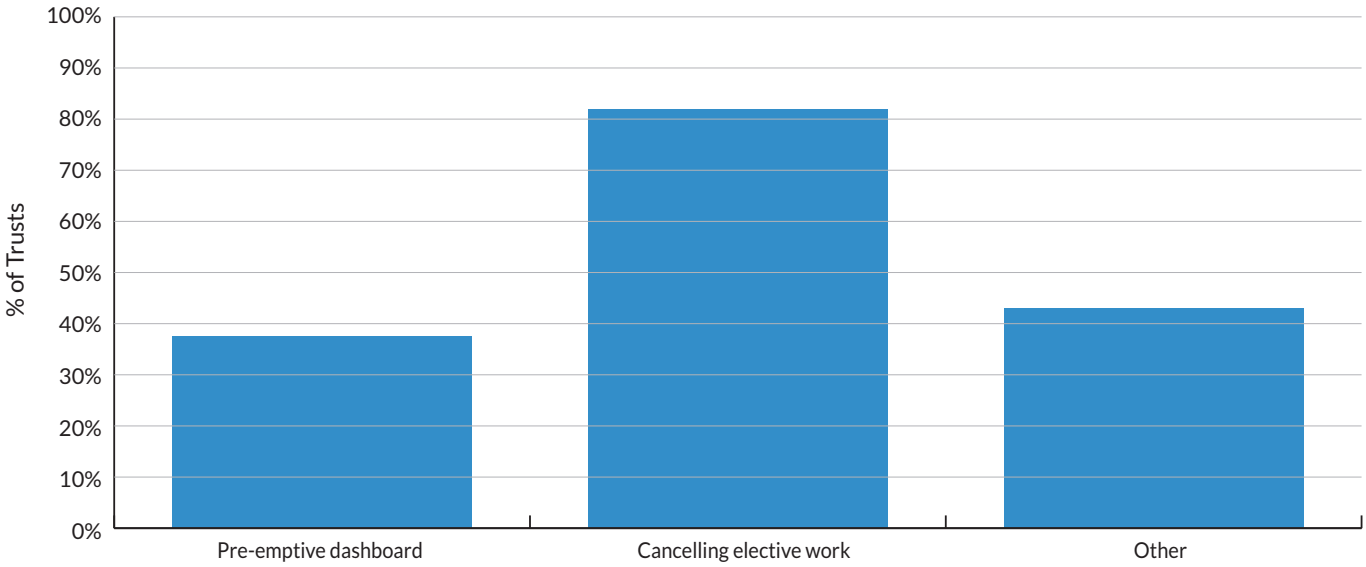
Future fractures prevention has far-reaching implications in terms of patient outcomes, hospital (and primary care) cost-savings, bed days saved, and reduced outpatient visits.

Fluctuations in workload

A key clinical objective in acute surgery is that the procedure is carried out within an appropriate time period. While this applies to all types of acute orthopaedic trauma surgery, the only group for which we have reliable information, because of the association with best practice tariffs, are hip fractures; which may mean that this group is treated preferentially. The BPT target for hip fractures is for surgery to be carried out within 36 hours of arrival from the ED[7]. An acute surgical service needs to be able to cope to likely variations in demand. The resilience to deal with surges requires some degree of flexibility. Historically, most flexibility has come from cancelling elective cases. This continues to be the case, despite the trend of splitting between hot and cold sites. As shown in **Figure 10**, the majority of trusts that responded to the questionnaire manage the fluctuating demand in orthopaedic trauma by cancelling elective work. Comments from our deep dives suggest that, as cancelling elective work becomes more difficult, the other cases which tend to be delayed are ambulatory trauma cases. This group includes wrist and ankle fractures, which do have NICE recommendations for the timing of surgery which are frequently not met.

[7] *NICE (NG124).*

Figure 10. Do you have policies to deal with peaks and troughs in orthopaedic trauma activity?



Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

Recommendations

Recommendation 1	The Trust quality committee should have mechanisms ensuring that BPT criteria, and NICE, GIRFT, and BOAST recommendations and similar clinical guidance are applied to all the clinically relevant orthopaedic trauma patient cohort, and not just the patient cohort referred to in the guidance. For example, this would mean that Fragility Hip and Femur Fracture BPT criteria are applied to all non-ambulatory fragility fractures.
Findings	There is significant variation in the care provided to an orthopaedic trauma inpatient, based on several factors including, but not limited to: • the time or day of admission - the proportion of hip fracture patients admitted to an orthopaedic ward within 4 hours of admission to ED is 29.7% (**Figure 6**); • the availability of clinical staff in the pathway; • ward or location of admission; • whether treatment for the fracture type is monitored nationally. There should be equitable quality of care and treatment for orthopaedic trauma patients regardless of factors outside of their control, with any barriers to this minimised.
Advice	Equal priority and the focus should be given to patients with all types of sustained fractures, with equal effort and attention given to meet time to surgery targets set out in all applicable NICE guidance. Increase the available resource to bring weekend care up to the standard of weekday care, if necessary, by spreading the currently used resource more equitably across the week. Ensure that all staff in the patient's pathway are available throughout the week, including access to orthogeriatricians, anaesthetists and physiotherapists for all fracture patients where this is required. Reduce the proportion of orthopaedic trauma patients being cared for on outlying wards (see recommendation 5).
Measurement	Trusts should audit the following: • hip fracture BPT criteria for all NAFF; • number of outliers, by type of fracture; • whether all members of the team see patients based on clinical need, irrespective of fracture location; • variation in specialty staff and theatre provision compared to patient need over the course of the week; • the percentage of patients supported postoperatively to weight-bear the activities of daily living, by fracture type.

Recommendation 2	Trusts should ensure that patients, over the age of 50, who sustain a fracture either from a low-energy mechanism (such as a fall from a standing height or less) or with no clear history of trauma are identified. This can be done by using radiology reports. Following identification there should be an active, robust mechanism for assessing the patient for increased bone fragility and associated high risk of further fractures and ensuring the patient is initiated on bone sparing treatment where appropriate. Appropriately resourced secondary fracture prevention services (often referred to as Fracture Liaison Services) should be in place to ensure this happens in a reliable and consistent manner. This is in accordance with recommendations in the Best Collaborative Pathway Improvement Programme's High Impact Restoration Strategy. It is also in line with recommendations in: • The NHS Long Term Plan (2019)[8] • NICE Quality Standard 149 (2017)[9] • Public Health England's falls and fractures consensus statement (2017)[10] • The Department of Health's 'Falls and Fractures – Effective Interventions in Health and Social Care' (2009)[11] • The British Orthopaedic Associations' Blue Book (2008)[12]
Findings	Many patients who have had a fracture are at risk of subsequent, potentially more serious fractures in the future. Identifying patients in which preventative measures can be taken, can help prevent subsequent fractures. There is significant unwarranted variation in whether patients with low-energy or fragility fractures are identified as being at risk and needing further assessment, and if so the mechanisms by which this occurs. There is variation in the process of initial identification between trusts, and between anatomic sites of the presenting fracture. Even when the patient is identified as needing further assessment and care, there is unwarranted variation in both the availability and quality of FLS provision throughout the country. Recent findings show that just over half of NHS acute trusts provide an FLS.
Advice	Systems should use the ROS implementation toolkit to develop business cases for and implement Fracture Liaison Service, and audit services on an ongoing basis.
Measurement	Trusts and systems should use the clinical standards in the ROS FLS implementation toolkit to identify cases from referral and provide FLS services, as well as KPI 7 in NHFD[13].

[8] *NHS. The NHS Long Term Plan (p 36). 2019. Available from: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf*

[9] *NICE. Osteoporosis Quality Standard. 2017. Available from: https://www.nice.org.uk/guidance/qs149/resources/osteoporosis-pdf-75545487906757*

[10] *Public Health England. Falls and fracture consensus statement: Supporting commissioning for prevention. 2017. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/586382/falls_and_fractures_consensus_statement.pdf*

[11] *Department of Health. Falls and fractures: Effective interventions in health and social care. 2009. Available from: https://laterlifetraining.co.uk/wp-content/uploads/2011/12/FF_Effective-Interventions-in-health-and-social-care.pdf*

[12] *British Orthopaedic Association. The care of patients with fragility fracture. 2007. Available from: https://www.bgs.org.uk/sites/default/files/content/attachment/2018-05-02/Blue%20Book%20on%20fragility%20fracture%20care.pdf*

[13] *Royal Osteoporosis Society. FLS Implementation Toolkit. Retrieved from: https://theros.org.uk/healthcare-professionals/fracture-liaison-services/implementation-toolkit/*

Multidisciplinary clinical care and governance

The aim of clinical governance is to continuously improve quality and safeguard high standards of care, by creating an environment in which clinical excellence will flourish[14]. In orthopaedic trauma care, the importance of multidisciplinary management for orthopaedic patients is well-recognised[15, 16], therefore, both direct care and governance needs to include multiple consultant groups. To achieve this effectively, clinical governance arrangements need to involve the expertise of clinical staff across a pathway. Multidisciplinary meetings (MDMs) are commonly used in the NHS to provide governance where multidisciplinary input is necessary.

During deep dives, we found governance arrangements in orthopaedic trauma are often relatively specialty centred, in that oversight of the pathway can be principally the responsibility of orthopaedic consultants. In order to be truly patient-centred, governance of the orthopaedic trauma pathway should incorporate all specialties providing care within the pathway. We saw a number of trusts that are progressing towards this, and others where more progress should be made. Considering this, we would encourage all trusts to review current practice locally to ensure orthopaedic trauma patients are well-served by a multidisciplinary team that is collaborating well.

Trust quality committees should ensure that all clinicians involved in the pathway of care for orthopaedic trauma patients contribute to its quality improvement. For this to be successful, there needs to be proportionate involvement in governance, audit and M&M meetings from key staff groups including, but not limited to:

- trauma and orthopaedics;
- emergency medicine;
- radiology/radiography;
- orthogeriatrics;
- anaesthetics and peri-operative medicine;
- junior doctors;
- nursing and AHP staff.

Although it is not necessary for all clinical staff to attend every meeting, it is important that all clinical staff involved in the pathway have experience of attending these meetings.

These meetings can be used to review:

- How well all specialties and clinical staff groups are represented by an individual(s) in the governance of the pathway on a long-term basis. **Figure 4b** (page 31) shows variation in the clinical specialties that routinely attend morbidity and mortality (M&M) meetings.
- How proportionate the representation of each clinical staff group and specialty is compared to the WTE input each provide for the pathway.
- How well responsibility for patient care is shared across the multidisciplinary team formally and informally on a day-to-day basis.

Assigning a named consultant

During the deep dives we saw what appeared to be significant variation in the way in which the various clinical specialties involved along an orthopaedic trauma pathway collaborated to manage, govern, and provide clinical care for the orthopaedic trauma patient. The same list of invitations was sent to each unit. However, the responses were quite different; the attendance at some deep dives was mainly from orthopaedic surgeons, while in other trusts there was broad representation from across the relevant specialties including emergency departments, critical care, radiology, medical director and other executives. Where such collaboration exists, there seems to be an easier interchange of ideas allowing a better resolution of problems at a local level. The current system of the named responsible consultant routinely coming from a single discipline does not encourage this collaboration. In trusts where multiple disciplines did not seem to be involved, the system of the named consultant seemed to encourage the concept that this is 'your' patient and not 'our' patient.

In areas where governance and collaboration work less well, members of the multidisciplinary team, particularly the ward juniors, will find that they have variable support. Appropriately, all patients have a named, responsible consultant to fulfil

[14] *Department of Health and Social Care (DHSC). Clinical Governance. Retrieved from: https://webarchive.nationalarchives.gov.uk/ukgwa/+/www.dh.gov.uk/en/Publichealth/Patientsafety/Clinicalgovernance/index.htm*

[15] *NICE (CG124).*

[16] *British Orthopaedic Association. The care of the older or frail orthopaedic trauma patient. 2019. Retrieved from: https://www.boa.ac.uk/static/a30f1f4c-210e-4ee2-98fd14a8a04093fe/boast-frail-and-older-care-final.pdf*

'good medical practice'. For any particular group of patients, the named consultant tends to come from a single specialty, which for patients included in this report would most frequently be trauma and orthopaedics, and should be assigned at admission. As patients move along their pathway of care, consultants of various other specialties may provide care but do not assume the named responsibility for patient care.

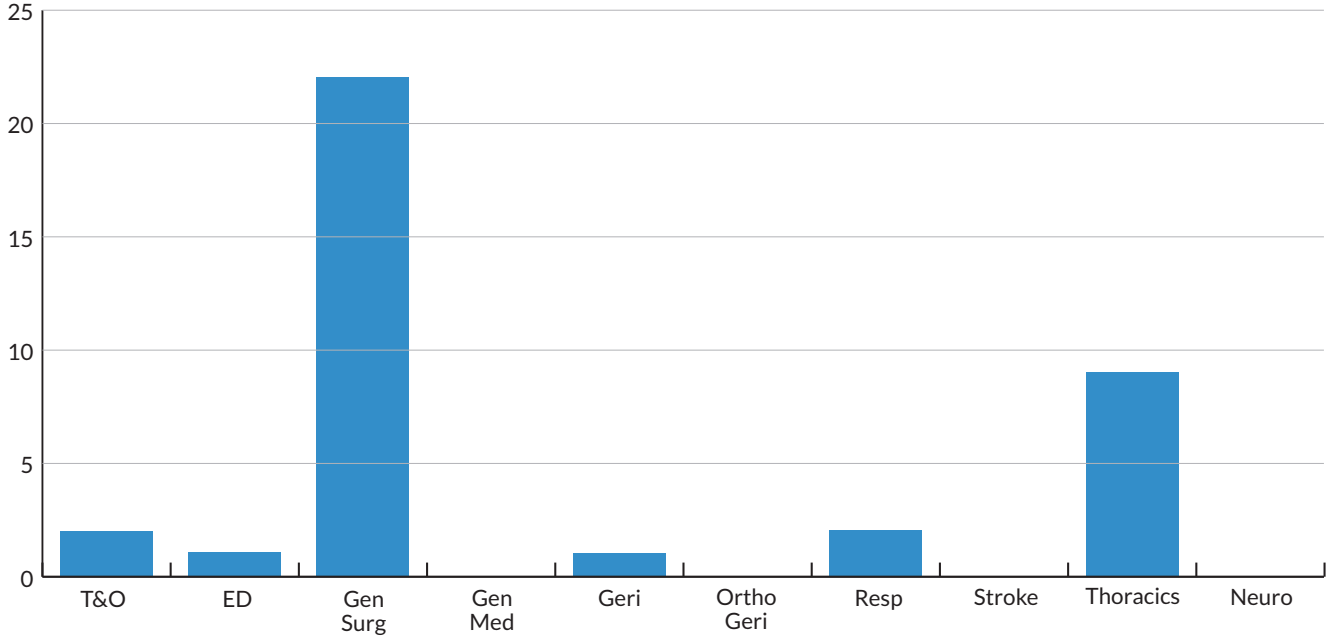
It can be difficult to change the named consultant even when the need to do so is clinically indicated. An example of this is when patients are admitted under a specialty consultant based on a suspected diagnosis, which ultimately ends up being incorrect. This is more evident where consultant groups have fewer informal opportunities to communicate, or where clear formal governance arrangements are not in place for the whole pathway.

Similarly, it has been found that in trusts where the named responsible consultant can be changed more easily, clinical staff are more likely to communicate between specialties both informally and via formal governance arrangements. Clear executive support for multidisciplinary management of the orthopaedic trauma pathway is also influential.

Another anomaly of the responsible consultant coming from a single specialty is highlighted in this report in the discussion on "orphan conditions". Examples of this include chest injuries and non-surgical head injuries. These do not fit neatly within any single specialty in many hospitals, and few feel they are trained in the management of these conditions to be the named responsible clinician. This variation may lead to patients being admitted under the care of consultants not trained to care for the condition that the patient has. Nationally there is a reluctance of individual specialties to face these issues, as it may result in them being committed to care for patients at the edge of their expertise. It therefore remains as a challenge for management structures to encourage the equitable best use of local resources and facilitate their enhancement when required.

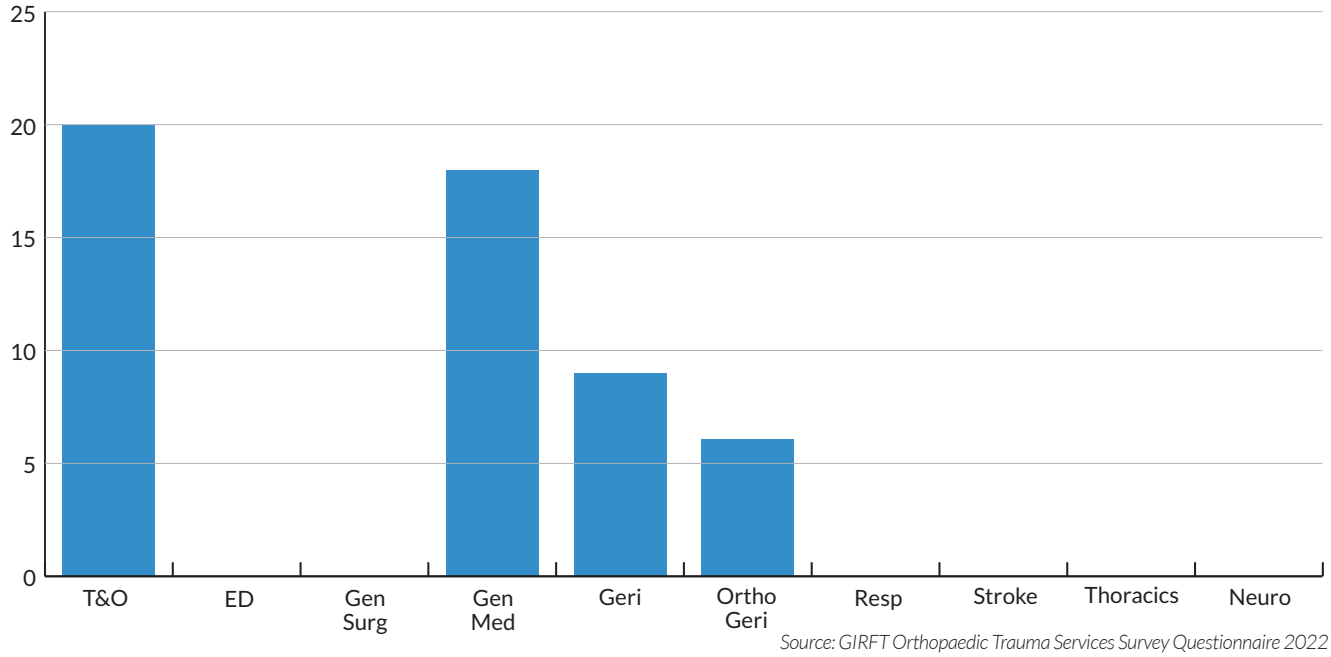
Figure 11 shows the response from the questionnaire as to who admits isolated chest injury, pubic rami fractures and isolated non-surgical head injury. The HES data showed that in most trusts there was further internal variation.

Figure 11a. Admitting specialty input for chest injury



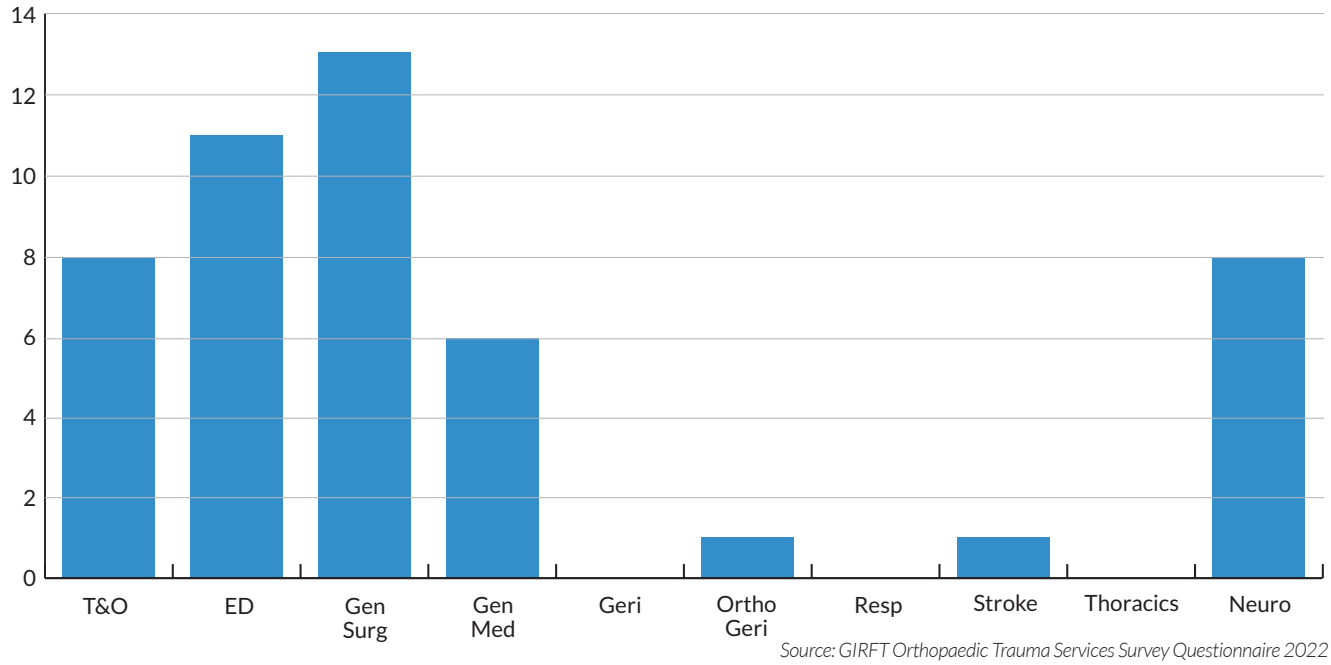
Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

Figure 11b. Admitting specialty input for pubic rami



Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

Figure 11c. Admitting specialty input for isolated non-surgical head injury



Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

There are advantages in all consultants along the pathway having some responsibility for patients as they move through the pathway, and this needs to be reflected in clinical governance. We have seen several examples of good practice where this is achieved as a result of the efforts of individuals and their professionalism. For instance, in many trusts there were multidisciplinary meetings for hip fracture patients. However, often these did not include other injured frail patients and there is no clear clinical reason why this should be the case. We encourage trusts to have structures in place to emulate this, particularly where there are indicators suggesting that governance could be improved. This includes addressing limited attendance at MDMs, or MDMs not covering all orthopaedic trauma indications. We would also encourage trusts to extend the use of formal governance methods, including MDMs, to govern the whole pathway for all orthopaedic trauma indications, and for there to be executive support for prioritising this. Where the clinical management extends beyond one managerial division, there should be measures to keep an association between responsibility and authority, either by sharing the responsibility or ensuring that the responsibility sits at a senior enough level to span divisions.

CASE STUDY

Management of chest injuries

Northumbria Healthcare NHS Foundation Trust

Northumbria Healthcare has a team of respiratory consultants, physiotherapists, specialist nurses and anaesthetists for rib fracture management on a respiratory support unit. The unit provides ward-based high dependency care with 24/7 consultant cover, anaesthetics (incorporating the pain team) support and specialised physiotherapy.

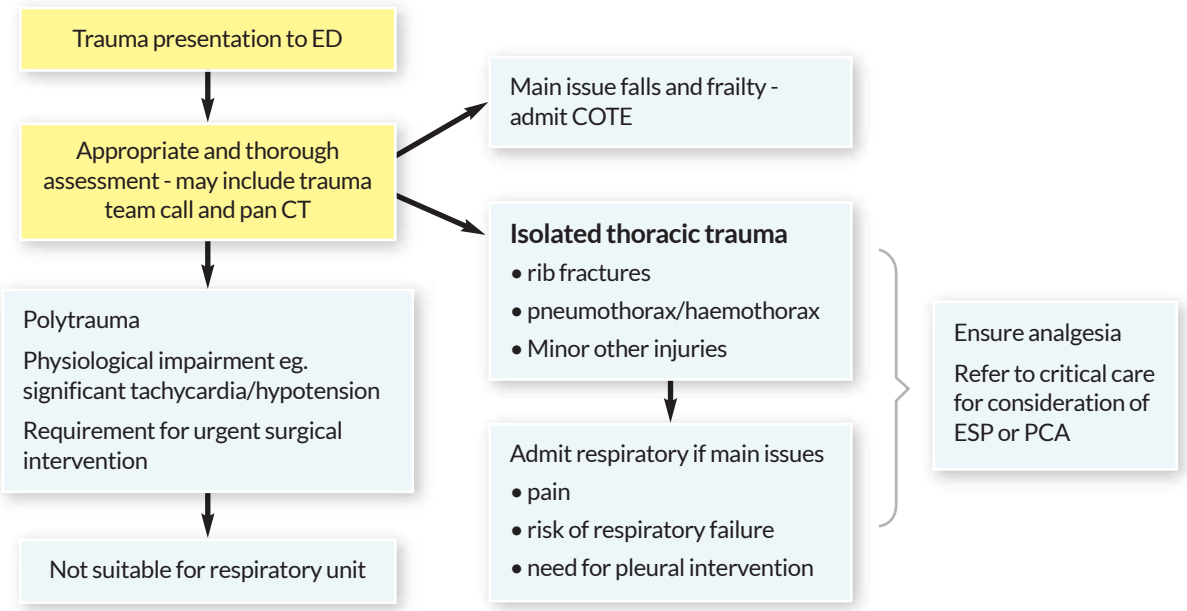
Patients with chest injury are managed on the respiratory unit, and in the case of polytrauma with specialist input from local orthopaedic, local surgical and regional neurosurgical teams.

Initial management decisions associated with thoracic trauma are made locally in the emergency department and then patients are triaged to the respiratory unit if appropriate or diverted to the regional trauma centre.

High level care for thoracic trauma can be performed by the respiratory team with analgesia managed by the pain team. The service is complemented by a frailty assessment service.

The importance of the physiotherapy and acute pain teams cannot be underestimated in the success of this set up.

Local decision pathway for trauma presentation



Note: COTE- care of the elderly, ED - emergency department, ESP - erector spinae catheter, PCA - patient controlled analgesia.

CASE STUDY

Common practice

At approximately a third of trusts only an orthopaedic consultant routinely attended M&M meetings, and only around a fifth of trusts reported that T&O, orthogeriatrics, ward nurses, and physiotherapists routinely attended M&M meetings. Similarly, only orthopaedic surgeons attended GIRFT deep dives at some trusts, while only one of two other disciplines attended others.

Best practice: Multidisciplinary Quality Improvement

Northumbria Healthcare NHS Foundation Trust

At Northumbria Healthcare NHS Foundation Trust, hip fracture M&Ms are attended by relevant staff including, T&O, anaesthesia, orthogeriatrics, and therapies. An orthogeriatrician leads the M&Ms and strongly encourages attendance, with the support of clinical directors for the relevant specialties. In addition, radiology and emergency medicine are involved in the trust's hip quality improvement programme (HipQIP). Attendance at the GIRFT deep dive included: emergency medicine, trauma and orthopaedics, anaesthesia, radiology, orthogeriatrics, and the medicine director.

Strong support for HipQIP from senior executives and clinical directors, as well as the programme itself, helped promote attendance at M&Ms and the culture of multidisciplinary quality improvement of the whole pathway. Staff were enthusiastic about the programme because they saw hip care as a core part of their job, and could see benefits to other trauma patients as well.

Leadership roles within the HipQIP programme are job planned at 0.25OPA for the orthogeriatrician lead, which also includes NHFD commitments, and one session for the trauma lead. M&M attendance for other clinical staff is part of the normal working day. For orthogeriatricians, this comes from their existing SPA time. In a typical M&M, two surgeons, two anaesthetists and two orthogeriatricians attend, as well as a nurse, pharmacist and physiotherapists. The same orthogeriatricians attend each M&M, but surgeon and anaesthetic staff rotate with the aim that all of them attend every 2-3 years. Senior clinical staff attend and share lessons with junior staff.

The clinical director said: *"In Northumbria, we aim to involve the whole MDT in our pathway developments, so it is normally well beyond working with just the medics involved. Our physio and nursing colleagues have led much of the innovation and when it comes to implementing change, they are much more consistent. It is the meeting together and co-designing that works so well. Over the years, our hip fracture group has involved patient leaders and this brings better design but also better behaviour from individuals: who are much more reasonable with patients in the room."*

Recommendations

Recommendation 3	The Trust Quality Committees should ensure that all clinicians delivering the pathway of care for orthopaedic trauma patients contribute to its quality improvement. This requires proportionate involvement in governance, audit and mortality and morbidity (M&M) meetings from staff groups commonly including, but not restricted to: • Trauma and orthopaedics • Emergency medicine • Radiology/radiography • Orthogeriatrics • Anaesthetics and peri-operative medicine • Junior doctors • Nursing and allied health profession (AHP) staff
Findings	During deep dives, we found governance arrangements in orthopaedic trauma are principally the responsibility of orthopaedic consultants and involvement from other specialties involved in the pathway was less consistent. This makes improving the pathway of care for orthopaedic trauma patients more challenging due to the number of specialties providing their care.
Advice	It would be beneficial for all clinical staff involved in the pathway to have some experience of M&M meetings, but it is not necessary or practical for all clinical staff to attend every meeting. Existing supporting professional activities (SPA) time for audit and governance should be used for these meetings, which typically occur monthly or bi-monthly, meaning some staff time currently spent in specialty meetings will be used for these meetings instead. Successful clinical governance arrangements will have a regular membership of individual staff representing all clinical staff groups. Staff may rotate to ensure as many staff as possible have some exposure to the meeting.
Measurement	Meeting attendance should be monitored. Attendance should be broadly proportionate to the WTE input provided by each clinician to the pathway of care. For example, attendance from emergency medicine would reflect the proportion of ED attendances that involve orthopaedic trauma. For an illustrative example, this could mirror the Northumbria model demonstrated in the case study on p44. In addition, staff morale should be taken as a proxy measure for successful governance. Trusts should monitor from qualitative feedback how well supported ward nurses and ward doctors feel by consultants of all specialties involved in the pathway.

Recommendation 4	Trusts should have written policies identifying the clinical staff involved in the treatment of 'orphan conditions', for which there is no one specialty that considers themselves to be trained to manage patient care. We will also co-develop guidance on collaborative management of orphan conditions with specialty associations and colleagues in national bodies, such as the GMC and elsewhere in NHSE, as needed. These conditions include: • chest injuries; • nonsurgical head injuries; • pubic rami fractures. As it is unlikely that any individual specialty is going to accept full responsibility for some conditions it is important that each specialty should play its part to prepare itself for collaborative management of its patients in its curriculum and training.
Findings	Some patient groups do not fit neatly into any specific pathway. HES admission data, GIRFT questionnaire data, and information garnered during deep dive visits demonstrates that there is significant variation in terms of the admitting specialty for certain diagnoses, including isolated non-surgical head injuries, pubic rami fracture, and chest wall injury. Across trusts, patients with these types of injuries are admitted to several different departments, including the following: • Trauma and orthopaedics • ED • General surgery • General medicine • Geriatrics • Neurology • Thoracic surgery • Respiratory medicine • Stroke • Major trauma service Given this variation, there is a need for clear protocols on how these patients are managed in order to ensure equitable care.

Recommendation 4 (continued)

Advice	Trusts should have clearly defined pathways for the management of these patients with these types of injuries to use the specialty resources available to them collaboratively and equitably. Trusts need to have strong governance arrangements in place for all patients, including those with injuries which fall between established pathways. Trusts should have clinical governance structures in place to provide clarity for which components of the pathway each specialty is responsible for locally and have oversight of collaborative multidisciplinary work.
Measurement	Monitor count of complaints and/or litigation claims for patients with these injuries. Trusts to measure mean length of stay against the national average for patients with these diagnoses. Local audit of standards of care for diagnoses which fall between established pathways.

Future Work	**GIRFT orthopaedic trauma workstream will draw on additional support from GIRFT clinical leads and advisors from other specialties and professions. This will include geriatrics, perioperative medicine, emergency medicine, radiology, nursing and therapies. We will work flexibly to make sure representation is sufficient within resource available.**
Findings	As illustrated by our recommendation on clinical governance (**Recommendation 4**), multidisciplinary input helps provide a comprehensive overview of a clinical pathway.

Ward of admission

For patients who need to be admitted, admitting them to the specialty ward most relevant to their reason for admission is a common challenge in acute care regardless of the specialty. Some key clinical staff, including nurses, are normally ward-based. This means that staff with the best expertise for a patient's care are often based in different wards to the patient. For staff who do follow the patients, their work may be significantly less efficient as time is consumed in walking between locations. This has the potential to affect the patient's outcomes and make a team's caseload more difficult to manage.

This is a significant challenge within orthopaedic trauma care. While the need for specialist ward-based input from admission is well recognised in clinical guidance, including NICE guidance, we heard that it is normal for orthopaedic patients to be admitted to a wide variety of wards other than the orthopaedic ward. This is corroborated by data from the NHFD which shows that variation nationally in 2019 (see **Figure 6**, page 33). At that time, 70% of patients were not admitted to an orthopaedic ward within four hours of presentation to the ED. This has now deteriorated and, as of February 2023, stood at 94%. This will largely reflect limitations in bed capacity, meaning that hospital staff need to look to all hospital wards to find available beds when patients are admitted. Consequently, clinical staff in the orthopaedic trauma team, and in particular nursing staff, are not always based where their patients are located.

This current practice can affect a patient's post-operative recovery and outcomes. It can also slow down their progress through the pathway to discharge. The first few hours following admission involve critical steps such as assessments, expectation-setting with the patient and family, and initiating discharge planning. Ideally, these steps need to be completed by clinical staff that have a good understanding of the orthopaedic trauma pathway. However, patients admitted to different wards will be attended to by other clinical staff that may not understand the orthopaedic trauma pathway well enough to initiate the process effectively. This means that the patient's pathway is likely to start sub-optimally, which can affect the rest of their pathway. It is clear from the REDUCE study that admission to an inappropriate ward adversely affects the length of stay.

We know from **Figure 2** (page 28) that the majority of patients admitted to the ED increases during normal working hours, with a peak between 4pm to 6pm. This data correlates to arrival times at ED, but it will likely be at least 3-4 hours later when patients arrive on wards. Therefore, there will be patients who will start their care on wards not appropriate to their needs. Those pre-operative care needs of the orthopaedic trauma patients are analogous to those of an elective orthopaedic patient which are generally provided in a structured pre-admission clinic. However, for the orthopaedic trauma patient, these needs must be satisfied under greater time pressure given the urgency of the surgery. Such care is difficult to provide for a patient admitted to an inappropriate ward.

Historically, clear outcomes data has not been available to quantify this (the patient benefits of ward of admission). However, we now know from the REDUCE study, that having a dedicated orthopaedic trauma ward reduces length of stay. As such, we have good evidence to show patients will benefit from increasing how many are admitted to the orthopaedic ward. To ensure patients receive the best possible care from admission, speciality clinical staff and patients need to be in the same place. This requires either sufficient capacity in the orthopaedic ward, or, where this is not possible, for clinical staff to see outlying patients daily. We have seen from our deep dives that trauma coordinators can help achieve the latter, by co-ordinating clinical management from ED admission to discharge.

CASE STUDY

Trauma coordinators

Bradford Teaching Hospitals NHS Foundation Trust

The mantra at Bradford Teaching Hospitals is to have *"the right patient, in the right place, at the right time, seeing the right person, and properly prepared!"* There are two trauma coordinators (both 0.8 WTE) covering a 7-day service – 07:30 hours to 15:30 hours each day for most of the year. They are band 6 registered general nurses with an orthopaedic clinical nurse background.

The trauma coordinators attend the daily (365 days a year) trauma meeting to formulate management plans for all orthopaedic patients.

Acting as a link and enhancing coordination and communication between the various members of the multi-disciplinary team the trauma coordinators are the constant for the service and patients. When asked how this works, they said:

"We are the go-to person, which could be anything! Clarifying an issue about date of appointment for a patient, solving a problem regarding inability to contact a patient, assisting with questions such as "what was the plan for this patient?!" or does the consultant have space on a theatre list? We sort appointments for those patients who continue as outpatients, update patients waiting for surgery at home on a daily basis and sort out theatre lists for the inpatients".

The trust has a "live" trauma board (spreadsheet) with all current patients documented. This is constantly updated, as soon as management plans are made, or change. This information is used asthe handover from day to day and is vital in daily trauma meetings.

The trust is keen to promote a culture that understands and meets the specialist and complex needs of all trauma patients.

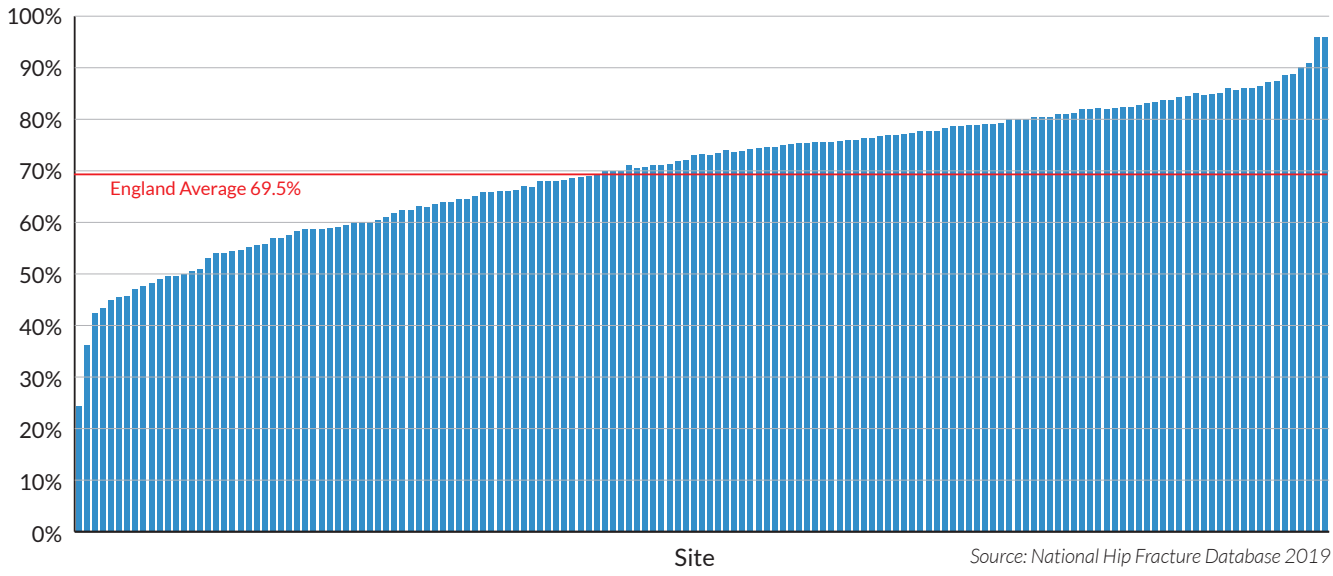
Recommendations

Recommendation 5	**Trust should ensure that in line with NICE guidance orthopaedic trauma patients are admitted to an orthopaedic ward. Where this is not possible, outlying patients (other than those who are medically fit for discharge) should be seen daily by senior medical and nursing staff appropriate to their clinical needs.**
Findings	The proportion of hip fracture patients admitted to an orthopaedic ward within 4 hours of admission to ED is extremely low at 29.7% (**Figure 6**). This is mainly driven by bed capacity, as well as time of admission, and will often mean patients do not receive the early medical attention they need, in an appropriate environment. The REDUCE study shows that having a dedicated ward reduces length of stay, therefore, we have good reason to expect patients will benefit from increasing how many are admitted to the orthopaedic ward. Practice examples from trusts suggest trauma coordinators may help mitigate effects of outlying patients, but there would be limited quantitative evidence available to support this as these roles are not standardised.
Advice	Trusts should use demand and capacity modelling to identify the likely impact on patient flow if bed days are saved, or beds added. Trusts should observe best practices illustrated by the Bradford Teaching Hospitals NHS Foundation Trust case study, York and Scarborough Teaching Hospitals NHS Foundation Trust case study and East Sussex Healthcare NHS Trust case study in the use of trauma coordinators. Trusts should use bed days saved from reducing length of stay and increasing use of day cases to improve timely flow into orthopaedic trauma wards. If still necessary, trusts should consider adding bed capacity where possible. The consequences for outlying patients should also be mitigated by providing daily senior medical and nursing input appropriate to their clinical needs. In particular, the use of trauma coordinators to provide case management is encouraged.
Measurement	Trusts should monitor trends in the percentage of hip fracture patients admitted to an orthopaedic ward within four hours (as evidenced by NHFD), alongside: • bed days saved following improvements to reduce length of stay and day case rates; • time points of changes to practice; • 4-hour wait performance; • patient experience.

Time to surgery

With the exception of injuries that are life or limb threatening, orthopaedic trauma surgery should be carried out on scheduled trauma lists as recommended in NICE clinical guideline 124 for hip fractures (the only group for which there is good data). **Figure 12** shows that in 2019 an average of 69.5% of hip fracture patients had surgery on the day of, or day after, admission. For injuries other than hip fractures, the data is not good enough to know the extent of the delays to surgery incurred by these other patients and whether the extent of the delay is different to those incurred by hip fractures. The most common reason for delays occurring is the available amount of theatre time and, therefore, operating capacity. From discussions in the deep dives, it is clear that patients with ambulatory trauma or 'held at home' may have extensive and generally unmonitored delays between injury and admission.

Figure 12. Surgery on the day of, or day after admission



Source: National Hip Fracture Database 2019

Throughout the duration of NHFD data collection, the single greatest reason for not achieving Best Practice Tariffs (BPT) has been delay to theatre. These delays were reported to have been exacerbated during the Covid-19 pandemic. Elective work waiting lists are currently at unprecedented levels and this is well-publicised. For acute work, the delays that are well recorded are when a patient spends more than four hours in the ED or misses the 36-hour target for hip fracture surgery, but once these are breached and for other groups of patients, no further reference is generally made. The only group of patients for which delays from admission to surgical procedure are routinely monitored is that of over 65-year-olds with hip fractures. One may presume, due to the size of this patient group, that this data could be used to monitor the general pressures on theatre time. However, as there has been a BPT attached to hip fractures and the delay to theatre is the commonest factor leading to BPT not being achieved, there may be an incentive to prioritise these patients for reasons other than the purely clinical. Consequently, they may not be a good guide to the general flow of orthopaedic trauma patients through theatre.

A delay in the time to theatre may have a number of adverse consequences. It is considered that mobility is particularly important for the general health of an older patient. There is potential for an older patient that is bedbound with an injured limb to lead to deconditioning and potentially an exacerbation of comorbidities[17]. When delays to surgery are unforeseen, they are often associated with greater periods of preoperative starvation than would otherwise be necessary. The time to theatre can affect both the difficulty and the quality of the surgical procedure, related to swelling and progress to healing. The REDUCE study found that in hospitals where over 80% of patients received surgery promptly (within 36 hours of admission), there was a 10% reduction in mortality.

[17] *GIRFT. Geriatric Medicine Report. 2021*

Units need to be able to cope with likely fluctuations in demand of acute services in addition to their average workload. If there is no planned capacity to deal with surges of presenting cases, there is a risk that backlog will persist for several days until there is a quieter period of admissions. In most units, the surges in required theatre time will comprise multiple patients requiring straightforward operations. However, particularly in the major trauma centres, patients with complex injuries may require extensive theatre time extending for a complete day or more. As shown in **Figure 10** (page 39), the most common strategy for dealing with surges in presenting cases is to cancel other procedures, which are usually elective procedures. This has led to a long-standing pressure between elective and acute work. Progress has been made towards ensuring that elective work continues uninterrupted through splitting centres into hot and cold sites. However, hot sites still need to be resilient to surges in demand. When routine elective cases are being dealt with on a separate site there may be pressure on any remaining more complex elective cases still carried out on the hot site where ITU and other specialties are available. The other group vulnerable to delay are the ambulatory trauma patients waiting at home for an operative procedure. For ambulatory trauma, everything suitable that can be done as a day case should be done as a day case. Regardless of where this resilience exists, there should be strategies for dealing with unexpected surges in activity.

British Orthopaedic Association ORTHOPOD Study

Key messages

Orthopaedic trauma services deliver timely surgery for most patients. There are, however, pressure points in the system that significantly impact on performance leading to some delays.

The distribution of caseload between centres is skewed and does not match resource. That pressure and skew could be easily reduced by rebalancing workload between neighbouring hospitals, particularly through increased use of dedicated day case lists. This requires the development of orthopaedic trauma networks to allow for timely and efficient patient flow.

Method

Around 23,138 operations (48.4% over 60 years of age), performed in over 80 hospitals across the four nations of the UK, were analysed. Prospective data capture was conducted by collaborative approach in two arms. Arm one captured weekly caseload and operating theatre capacity. Arm two identified patient and injury demographics, and time to surgery for specific injury groups.

Findings

There is a six-fold difference in caseload between units. Several of the busiest units have over 60 patients waiting every week and many of these patients are waiting at home or are frail older inpatients with lower limb fragility injury.

Around 30% of cases are suitable for day case pathways but only 5% are operated on through dedicated outpatient pathways.

Source: W Baldock et al; forthcoming publication in The Bone and Joint Journal

Establishing how much theatre capacity is needed for orthopaedic trauma surgery is difficult. The number of patients needing surgery fluctuates on a day to day basis, as does the urgency and complexity of individual surgeries. Different hospital sites also have other varying pressures to manage, affecting their ability to recover from a surge. Given this, it is necessary to give an accurate picture of capacity needed in the service. In order to achieve this, hospitals require a clear and continuous record of individual cases comparing their time to surgery, dependent on their diagnosis, to those recommended in national guidelines.

Another strategy suggested is to introduce evening operating lists. In an acute setting this can be a difficult strategy to employ beneficially. Staff from the planned evening list are frequently being moved to cover unplanned overruns in other theatres. Consequently, the apparent efficiency of those planned evening lists is low. Although moving patients to another site for surgical procedures is at first sight attractive, this may not be straightforward because there are patients that staff should not be moving due to the fact that they are elderly and not very well. Orthopaedic trauma surgery is related to a large inventory of theatre equipment. According to the recent NHSE Medical Device Vigilance and Spend Comparison

Services data, 40% of implants (Class III Medical Device) product codes used, are orthopaedic trauma implants e.g. screws, nails, plates, pins, wires etc[18]. In the same period that this data was collected, there was a total of 3.4million unique physical products (including screws, nails, plates, pines, wired etc) implanted in orthopaedic trauma. While some simple procedures may be catered for to deal with the generality of problems, it is best that the patients stay with the equipment. Split site working is also problematic and introduces less resilience into rotas.

Bed and theatre capacity remain key, however, when considering extra theatre capacity; a dilemma to keep in mind is that the actual operating theatre suite tends to be underused at the weekend but extending operating to the weekend in an acute service means that those who are already committed to working at weekends will be asked to do more. It is almost certain that staff dissatisfaction will prevent this from being a long-term solution. Work that is safe to do during the normal working week should be done on adequately staffed scheduled lists during that time. Work that needs to be done at night should be done by an appropriate team. Weekend work should be an efficient balance to best use the theatre estate and the staff in a sustainable manner.

CASE STUDY

Dealing with trauma activity surges, specifically for hip fracture patients

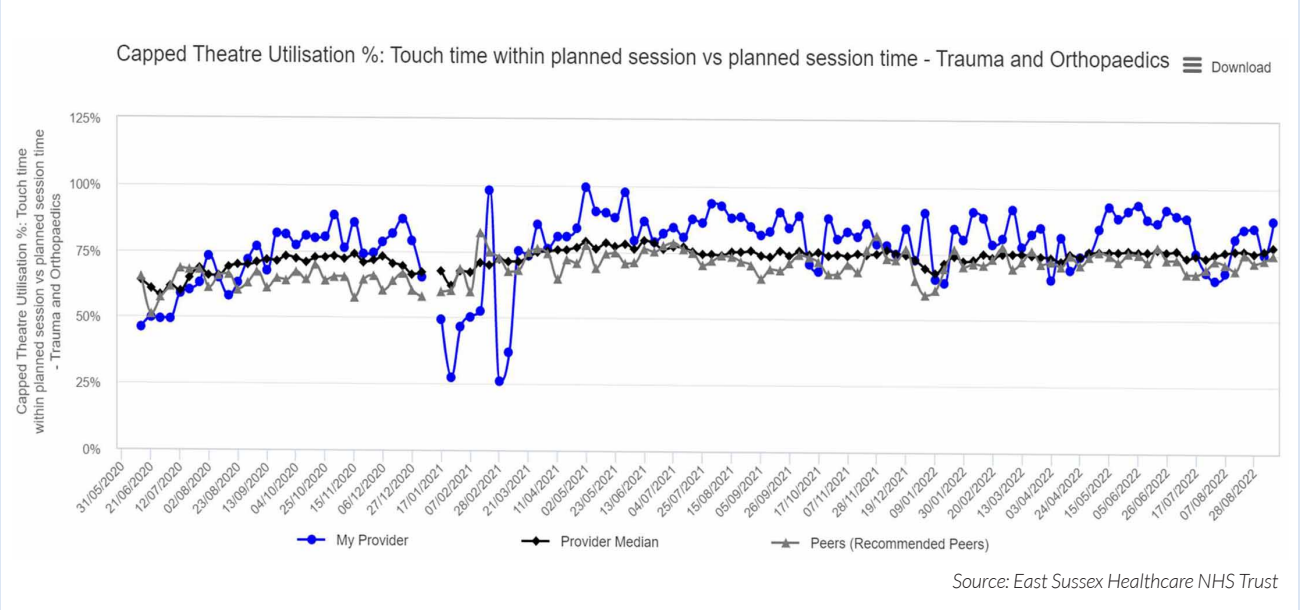
East Sussex Healthcare NHS Trust

The trust had an issue dealing with trauma activity surges, specifically for hip fracture patients. In addition, patient sickness and the impact of infection prevention and control pathways (separation of amber/green) had a detrimental effect on the ability to backfill short notice elective cancellations.

The trust therefore sought to deal with the trauma activity surges by adding trauma patients onto the end of the elective operating lists as the trust felt it was imperative that elective activity remains on the trauma site.

Close liaison between the on-call consultant and booking team ensures that trauma activity surges are identified, and enables the trust to backfill last minute elective list cancellations with trauma patients.

In terms of benefits, there is correct skill mix, and an increase in the availability of the surgeons, specifically for complex/revision trauma surgery. This model of care goes some way to negating the impact of this on theatre utilisation. This enables the department to flex trauma capacity / specialised consultant skills as the demand requires. There is also improved patient satisfaction as patients are operated on more quickly.



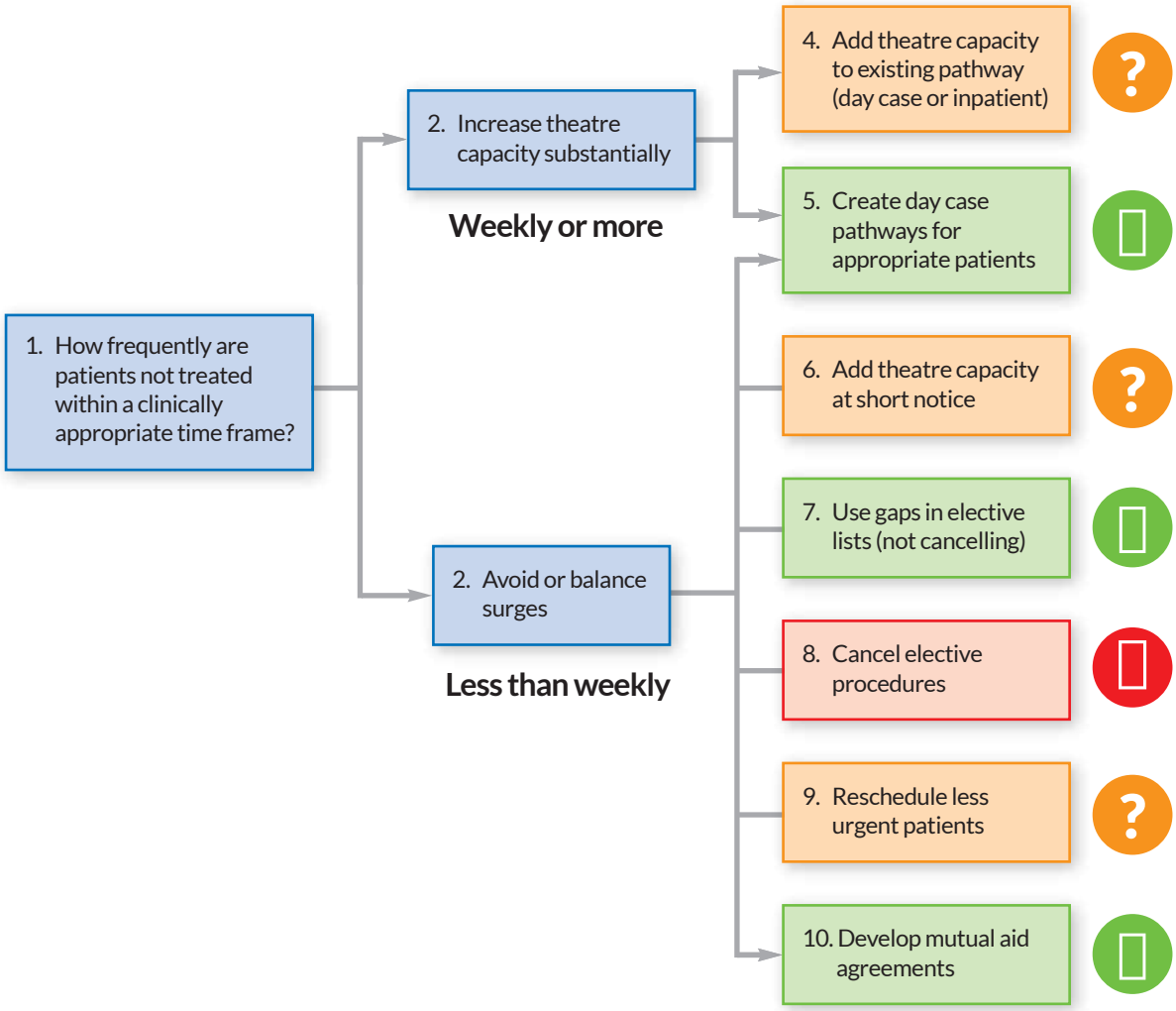
Source: East Sussex Healthcare NHS Trust

[18] *NHSEI Medical Devices Vigilance Spend Comparison Services (period Q1 2020 – Q4 2021)*

To utilise the available theatre capacity most efficiently and to help manage the throughput in beds, many units have trauma coordinators to work alongside members of the multidisciplinary team.

An example of a supporting tool to identify the most appropriate decisions to make around managing time to surgery is shown in **Figure 13** below.

Figure 13. Delays to theatre decision tree



Source: GIRFT Orthopaedic Trauma Workstream 2022

As shown in **Figure 13** above:

1. Currently, advance warning of surges is limited in the absence of a well-functioning trauma system that can show expected delays before they occur. Liverpool University Hospitals NHS Foundation Trust has worked around this, as shown on p56.
2. Trusts with routine delays probably need to increase operating capacity substantially as average demand may be higher than capacity. It is important to make best use of opportunities to create day case pathways.

3. Trusts with less frequent delays are likely to need a combination of escalation options. The better options avoid cancelling other patients or unscheduled extra work. Relying on escalation is not advisable, and so we also encourage trusts to consider adding capacity efficiently through a day case pathway for less urgent cases.
4. Adding theatre capacity to serve existing pathways may be necessary but will require resource and potentially misses an opportunity to increase efficiency by developing day case pathways.
5. Delivering day case pathways is generally more efficient when the pathway has its own bed and theatre capacity. The day case pathway as a whole would save bed days, would prevent fewer complex patients experiencing long delays, and leave surge capacity available in existing trauma theatre slots.
6. This is challenging to do at short notice, as it requires: theatre space; recovery space; surgeon(s); anaesthetists(s); scrub staff; anaesthetist support staff; recovery team and a radiographer.
7. Using gaps in elective lists is possible where elective activity is delivered on the same site, as demonstrated by Maidstone and Tunbridge Wells NHS Trust, including when delivered in an elective surgical hub. The option is possible when elective cancellations occur. In these circumstances, there may not be an elective patient for whom infection control has been completed. As such, trauma patients could be operated on in an empty theatre slot. The trauma patients would not use a bed in the elective unit.
8. This is undesirable and will become less possible as emergency and elective activity is separated. It has often been used historically since it is relatively easy to do as it simpler than adding additional lists at short notice.
9. Rescheduling lists for less urgent inpatients or 'held at home' patients is very common in surges, and is often the most pragmatic thing to do clinically. However, the practice can often lead to extended delays for 'held at home' patients.
10. Mutual aid agreements across hospitals within a network/ ICS footprint may help alleviate pressure at individual providers following a surge, when there is capacity available at another provider. This can help either when a sub-specialty clinical resource is unavailable, or there is a broader issue with theatre capacity.

CASE STUDY

Trauma coordinators

York and Scarborough Teaching Hospitals NHS Foundation Trust

The trust has two trauma coordinators, one on each trauma site. Prior to the introduction of the trauma coordinators, patients were tracked and planned by junior doctors. There was no single point of contact for patients and the pathway was not well coordinated.

The trauma coordinators ensure that all patients admitted to the trauma ward are added to the trauma list, follow up patients referred to the fracture clinic, ensure all routine preop assessment paperwork is used, liaise with A&E, and ensure the trauma round with consultants covers all trauma patients including any who are outlying on other wards.

Every morning, they check all trauma patients, identifying where they are, why they are in, and their current treatment and discharge planning ahead of ward rounds. They ensure all patients have a plan, and they review them afterwards to ensure appropriate follow up.

The trauma coordinators also plan the theatre lists to ensure effective and efficient use of trauma lists and ensure any delays are escalated.

Since employing dedicated trauma coordinators, the trust has been able to increase its ambulatory trauma patients, ensuring only those patients who need to be in hospital are in hospital. This ensures a good use of the bed base, improves patient experience, and reduces the risk of hospital acquired infections for patients.

In addition to the facilitation of the pathway, the trauma coordinators strive to improve the patient experience: they spend time with patients to explain the process and pathway, and they regularly communicate with patients to ensure they are kept informed.

CASE STUDY

Prioritisation of orthopaedic trauma surgery

Liverpool University Hospitals NHS Foundation Trust

Challenge

Increasing demand resulted in a 'waiting list' of acute fracture patients within the organisation. Externally reported performance of hip and open fracture compliance with regard to timing of surgical intervention was poor and local audit suggested the trust was regularly failing upper limb and ankle fracture patients.

Approach

Work has been undertaken with the BOA Trauma Exchange to agree orthopaedic trauma specific NCEPOD category examples; based on documented national guidance, such as BOAST and NICE, and expert opinion. A subsequent national snapshot audit suggested Liverpool was not alone in poor compliance with timely fracture surgery. Within Liverpool University Hospitals NHS Foundation Trust (LUHFT), all trauma patients listed for surgery are now done so with a prioritisation category, as per the agreed NCEPOD examples. Breaches of compliance are reported divisionally on a daily basis.

Prioritisation of orthopaedic trauma surgery

Code	Category	Examples
1A	Immediate (life saving)	Open pelvic fracture Septic patients with MSK involvement
1B	Immediate (limb saving)	Vascular injury Compartment syndrome
2A	Urgent <12 hours	Debridement & stabilisation (temporary or definitive) high energy open fractures Reduction native joint dislocations +/- surgical stabilisation if persistent instability
2B	Urgent <24 hours	Debridement low energy open fractures Debridement contaminated open wounds (no fracture) Stabilisation (temporary or definitive): - complete articular fractures - unstable ankle fractures - high energy femoral fractures Reduction and stabilisation paediatric supra-condylar humeral fractures
2C	Urgent <36 hours	Lower limb fragility fractures ORIF ankle fracture Reduction of dislocated joint replacements MUA paediatric distal radius / forearm fractures
3A	Expedited <3 days	Definitive stabilisation and closure open fractures ORIF displaced intra-articular distal radial fractures ORIF rib fractures ORIF pelvic ring injuries Definitive stabilisation tibial shaft fractures
3B	Expedited <5 days	ORIF acetabulum
3C	Expedited <7 days	ORIF displaced extra-articular distal radius Definitive stabilisation: - complete articular fractures - unstable ankle fractures - high energy femoral fractures Other non-specified injuries
4	Elective	

Next steps

Work is ongoing to develop a trigger for escalation in the form of either increasing trauma theatre capacity or reducing demand. The challenge is delivering these resultant actions and may include an ability to increase capacity for ambulatory trauma on the Broadgreen site or to reduce demand via mutual aid through a well-functioning regional fracture network.

Recommendations

Recommendation 6	Trusts should manage their trauma service using an automated theatre workload dashboard including prioritisation categories reflecting the nationally recommended time to surgery within NICE, BOAST, and BPT tariff guidance. This will enable trusts, systems and national leaders to: • monitor and respond to real-time fluctuations in the orthopaedic surgical trauma workload and theatre utilisation (locally and nationally); • anticipate potential delays to orthopaedic trauma patient care; • decide what actions are required to bring treatment times in line with national guidelines, referring to the decision tree provided in **figure 13.**
Findings	The variable nature of the trauma workload effectively creates a waiting list that can grow suddenly for injured patients requiring surgery. The capacity needed to meet this demand is difficult to establish and there is currently little data on whether orthopaedic trauma patients receive surgery in line with national guidance. A clear and continuous record of individual cases comparing their time to surgery to those recommended in national guidelines, dependent on their diagnosis, would give a much more accurate picture of capacity needed in the service. Where there is a gross or frequent mismatch between demand and capacity, an increase in static capacity is likely to be required. Otherwise, standard operating procedures need to be in place to treat patients within timescales set out in national guidance on those occasions where the static capacity is exceeded.
Advice	Trusts should use an information system that can record data. Commercial systems can achieve this, and we will also be exploring how best to help trauma services meet their information needs (see **recommendation 9**). The decision support tool in **Figure 13** can assist trusts to assess options. This can be used in discussion with ICS/networks where appropriate i.e., when discussing mutual aid.
Measurement	Trusts will have access to real time information about their own outstanding trauma surgery workload, that can also be collated nationally. Trusts will be able to baseline their current waiting times and the goal should be to meet time standards developed by the BOA Trauma Exchange and illustrated by the case study of Liverpool University Hospitals NHS Foundation Trust. These standards were based on guidance including NICE guidance for non-complex fractures (NG38), and hip fractures. Escalation triggers will be needed for when time standards are not met. As noted in the introduction to NG38, these standards should not just apply to the specified fractures but should be considered as representative for other similar fractures.

Orthoplastic provision for patients with open fractures

Orthoplastic review at network level

A fracture is said to be open when it communicates with a wound through which contamination can occur. Consequently, there is a much higher risk of infection in an open fracture compared to a closed fracture. An infected fracture can have serious consequences for the patient. It can also be complicated, time-consuming and expensive for the system to treat. Therefore, it is extremely important to get the treatment right the first time.

The first British professional guidance that began to set the standards and change the practice in relation to severe open fractures of the lower limb was produced by BOA and British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS).

This set the standard that fractures should be managed jointly by orthopaedic and plastic surgeons from the outset. In 2016, NICE extended the range of fractures included and this was further clarified in BOA's Standards for Trauma and Orthopaedics of 2017 "all patients with open fractures of long bones, hind foot or midfoot (excluding hand, wrist, forefoot or digit)"[19]

Given the importance of appropriate management of open fractures, they merit a specific review. This appropriate management depends on satisfactory collaborative working at trauma network or integrated care system (ICS) level and the equal involvement of orthopaedic and plastic surgeons – therefore, a separate review at this level would be appropriate. This current report provides headline findings to illustrate the need for that review, which we hope prompts consideration as to how we, as part of NHS England, might collaborate with the BOA and BAPRAS to provide this review of local systems.

Based on discussions with a network representing the majority of orthoplastic units in England and questionnaire data, we have found unwanted variation in:

- referral practice to the orthoplastic centre;
- personnel and operating facilities at the orthoplastic centre;
- rehabilitation provision.

Co-location

For such joint management to occur it is necessary that the patient is taken in a timely fashion to a facility where collaborative treatment can be provided. In many cases this fits well with transfer along the normal pathways of a major trauma network when the major trauma centre (MTC) has an orthoplastic service. However, in some cases, such convenient co-location does not exist for historic reasons. This can include plastic surgical units that were originally placed away from centres of population during World War II.

It is most common for orthoplastic units to be on the same site as an MTC. Three responders to the questionnaire said that their orthoplastics unit was not on the same site as the MTC. If not co-located, a robust system is needed to provide emergency orthoplastic care when it is needed for patients arriving at the MTC.

Components of an orthoplastic unit

BOA/BAPRAS guidance describes the key components of an orthoplastics unit. The questionnaire found these were not consistently in place. In particular, only:

- 73.47% of responders said their unit had scheduled, combined review clinics for severe open fractures;
- 53.06% of responders said their unit had sufficient combined operating lists with consultants from both specialties to meet the standards for timely management of open fractures;
- 46.94% of responders said their unit held regular clinical audit meetings with both orthopaedic and plastic surgeons present.

There is unwarranted variation in the availability of orthoplastic facilities in centres caring for open fractures. The necessary components for an orthoplastic facility were outlined in the NICE guidance and amplified in the BOA/BAPRAS Standards as follows[20]:

- A combined service of orthopaedic and plastic surgery consultants.
- Sufficient combined operating lists with consultants from both specialities to meet the standards for timely management of open fractures.

[19] *British Orthopaedic Association. Open Fractures. 2017 Retrieved from: https://www.boa.ac.uk/static/3b91ad0a-9081-4253-92f7d90e8df0fb2c/29bf80f1-1cb6-46b7-afc761119341447f/open%20fractures.pdf*

[20] *British Orthopaedic Association. Open Fractures. 2017 Retrieved from: https://www.boa.ac.uk/static/3b91ad0a-9081-4253-92f7d90e8df0fb2c/29bf80f1-1cb6-46b7-afc761119341447f/open%20fractures.pdf*

- Scheduled, combined review clinics for severe open fractures.
- Specialist nursing teams able to care for both fractures and flaps.

In addition, an effective orthoplastic service will also:

- Submit data on each patient to the national trauma database (TARN).
- Hold regular clinical audit meetings with both orthopaedic and plastic surgeons present.

While most initial procedures are best carried out on planned daytime operating lists, there are occasions where joint orthopaedic and plastic interventions can be required at any time of the day or night. Therefore, these orthoplastic facilities needs to exist. Definitive orthoplastic procedures can be time-consuming, as significant open fractures commonly require a complete day of operating time. Accordingly, the inevitable fluctuations in demand create a need for flexibility and surge capacity.

There is also much variation in the default treatment for significant open fractures of the lower limb between ring fixation or intra-medullary nailing. The relation of this variation to patient outcome - deep infections in particular – should be explored to establish whether such variation is unwarranted.

Consultant presence

Orthoplastics care is 24/7 service and involves consultant surgeon input from trauma and orthopaedics (T&O), plastics and vascular. It is preferable that care is delivered by consultants with a specialist interest in trauma. Findings from the questionnaire showed that 24/7 consultant cover was not consistently available, and cover from consultants with a specialist interest in trauma was less common. Specifically:

- While 100% of units reported 24/7 T&O cover, only 64.58% of units reported 24/7 cover from T&O consultants with a specialist interest in trauma.
- 82.61% of units reported 24/7 plastics cover, but only 36.17% reported 24/7 plastics cover from plastics consultants with a specialist interest in trauma.
- 89.13% of units reported 24/7 vascular cover, but only 40.54% reported vascular cover from vascular consultants with a specialist interest in trauma.

Operating capacity

Sufficient operating list capacity is needed to treat patients in a timely manner and surges in the number of patients needing care can lead to delays where there is not sufficient capacity. The questionnaire found that:

- Only 30.61% of responders thought their unit had enough combined orthoplastics lists to deal with patients in a timely manner.
- 20.41% of responders said their unit had no planned strategy to respond to surges.
- Surges were most likely to be accommodated by delaying other acute surgery, rather than by delaying elective surgery, with 69.39% saying their unit delayed acute surgery versus 51.02% saying the unit delayed elective surgery.

Referral practice to orthoplastic centres

There is unwarranted variation in the referral and transfer of patients identified as having open fractures, which should be treated in an orthoplastic centre. This pathway may vary both geographically and also by the anatomical location of the injury. Some networks will have arrangements for bypass whereby pre-hospital services may take particular patients directly to an orthoplastic centre. Some networks may have automatic ED to ED transfer, while in other networks these practices do not exist. As the management of open fractures is time critical, it is important to implement smooth, uncomplicated pathways to get patients to the correct environment without undue delay.

NICE and BOAST guidance on open fractures recommends patients within a defined group are taken directly to, or transferred to, a specialist orthoplastics centre. The questionnaire showed that transferring patients frequently required prior discussion with the receiving centre. The standard was also applied inconsistently for different patients within the scope of the guidance. In particular:

- 24.44% of responders said that patients were only transferred at their unit after discussion with the receiving orthoplastics team.

- While 71.11% of responders said pre-hospital bypass was in place for patients considered to have 'severe' fractures, only 62.22% said this was available for all BOAST defined fractures.
- For transfer between EDs, the opposite was true. 57.78% of responders said transfer was in place for all BOAST defined fractures, whereas only 48.89% said it was available for all fractures considered severe.

Repatriation in orthoplastic units

Well-functioning repatriation policies release beds in orthoplastics units when patients no longer need specialist care. Without effective repatriation, bed capacity is pressured at the orthoplastics site. This then reduces bed availability for patients attending that site. The questionnaire showed repatriation was not functioning well in the majority of units. Specifically:

- 51.02% of responders said their unit had an agreed network policy which functioned poorly;
- 12.24% of responders said their unit had no agreed policy;
- 32.65% of responders said they had an agreed network repatriation policy that worked well.

Rehabilitation provision

There is variation in how rehabilitation is provided, including whether it is centralised or delivered close to the patient's home. Central coordination is needed for the rehabilitation of most patients with severe open fractures, although the care can be provided at the centre of a network or in a peripheral unit. The majority of providers who responded to the questionnaire indicated that this standard was in place for most severe open fractures. However, approximately 23% of responders said this was only in place for patients whose fracture required external fixation. Specifically:

- 36.73% of responders said rehabilitation was delivered centrally for most severe open patients at their unit;
- 26.53% of responders said rehabilitation was delivered peripherally but coordinated centrally for most severe open fracture patients;
- 10.2% of responders said rehabilitation was delivered centrally for most severe open fracture patients managed with external fixation;
- 12.24% of responders said rehabilitation was delivered peripherally but coordinated centrally for most severe open fracture patients managed with external fixation;
- 14.29% of responders said some other arrangement was in place.

There is also variation in how much MTC or orthoplastic centre oversight of the rehabilitation there is. Furthermore, there is variation in the level of psychological support provided for patients who have sustained injuries. Psychological input is often only provided if the clinical criteria defining major trauma are met, which results in some patients with the potential need for psychological support not receiving such care. This unmet need has the potential to affect a patient's overall recovery.

Future work

Future Work	**We will seek support for the development of a separate GIRFT review covering the orthoplastics care of patients with open fractures.**
Findings	An exploratory questionnaire has shown that orthoplastics units are not consistently meeting the service standards considered necessary by the British Orthopaedic Association and British Association of Plastic Reconstructive and Aesthetic Surgeons. Issues reported included: • insufficient combined operating lists to provide timely care; • sub optimal practice with respect to patient bypass, transfer and repatriation; • gaps in consultant cover for vascular and plastics, as well as use of consultant staff with a specialist interest in trauma; • and lack of appropriate coordination and oversight of rehabilitation provision for some patients with severe open fractures.

Standardising clinical practice for common injuries

Keeping the management of simple injuries simple

This report focuses on fractures with unwarranted variation covered in NICE guidance, therefore, it does not include all types of fractures.

There is significant variation in the pathways for common 'simple' fractures e.g., wrist, ankle, shoulder, metacarpal, 5th metatarsal, and shoulder dislocation. These make up the majority of the trauma service workload. This is due to a tendency to concentrate on the 'complex, interesting cases'. The biggest variation of all is that some units have clearly defined pathway guidelines.

CASE STUDY

Management of simple fractures/ musculoskeletal injuries

West Suffolk NHS Foundation Trust

The trust has recognised that there are some simple fractures/ musculoskeletal injuries that will heal in an expected way without requiring input from an orthopaedic surgeon, and therefore do not need to be passed on to a virtual fracture clinic or a face-to face fracture clinic.

Providing the patient has some written instructions describing their injury and some simple instructions and exercises they can do at home, and a telephone number to contact if they are not improving as expected, the trust has found that patients rarely need to be followed up in a fracture clinic.

This has the benefit of the patient or relative not needing to take time off work, park and wait in a waiting room, with easy access back in without going through their GP or ED again.

This does require information about treatment of these injuries to be shared with ED staff.

The injuries included in this group are:

1. Undisplaced fractures of lesser toes (no clinical malalignment)
2. Isolated fractures of the clavicle in children under the age of 14
3. Fracture of the radial head with minimum displacement
4. Boxers injury of the distal end of the 5th metacarpal without rotation of digit
5. Fracture of the base of the 5th metatarsal
6. Ankle sprain
7. Non bony mallet finger
8. Buckle fractures of distal radius in children

CASE STUDY

Use of QR codes on casts to signpost patients to advice

Bradford Teaching Hospitals NHS Foundation Trust

The trust carried out an audit between January and April 2020. On average over those four months, its plaster room received 20 telephone calls per week where initial advice and instructions were repeated to patients.

In total the plaster room had 30 bookable appointments per week, and the audit showed that 87% of these were taken up by patients returning for reasons that could have been dealt with without having to attend hospital. All these patients said they either didn't remember the information given, didn't read it, or had lost the leaflet given to them.

The trust therefore began to use a QR code on durable tape, attached to the plaster cast when applied, in order to signpost patients to the correct information and make it easy to access and understand.

Following that initial audit, the trust carried out a pilot of 40 forearm casts with QR codes, and 40 below-the-knee casts with QR codes. The trust contacted these 80 patients to ask them about their experience with the QR codes. All 80 patients were able to easily access their website, and all 80 patients scored highly on the website's ease of use. All patients had positive comments about the use of QR codes.

On average a forearm cast is approximately £19.35 per visit, and below-the-knee cast is approximately £32.70 per visit (cost of replacing a cast as well as the cost of the technician, but without needing doctors or other reviews). The trust is now only seeing five bookable appointments used each week since roll out of the QR codes. This means the trust is saving on average between £483.75 to £817.50 per week.

The trust has now rolled out use of QR codes for all types of casts, and included videos by plaster room staff and physiotherapists. The QR code is specific to each type of cast, takes the patient directly to relevant information, and the information can be translated into different languages.

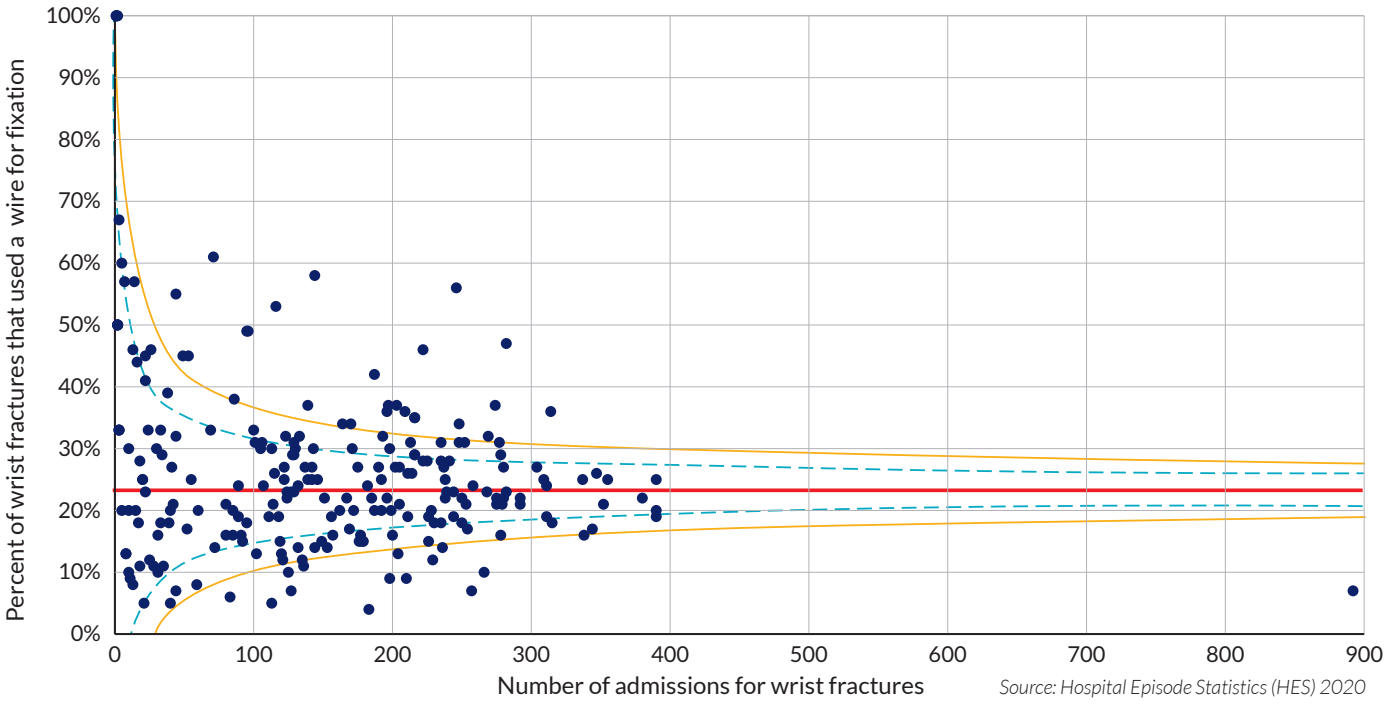
Standardising the approach

NICE has clear recommendations on how to manage the most common type of wrist fracture. However, there is still significant variation across units in the management of these fractures. The denominator for wrist fractures is difficult to obtain as many are managed as outpatients, but even taking this into account, it appears that there is unwarranted variation. When surgery is indicated for a dorsally displaced distal radial fracture in an adult, Kirschner wires (K-wires) should be offered where no fracture of the articular surface of the radio carpel joint is detected or when displacement of the radio carpel joint can be reduced by close manipulation. Open reduction and internal fixation (ORIF) are to be considered if closed reduction of the radial carpal joint surface is not possible. Furthermore, a 2016 study by the UK Distal Radius Acute Fracture Fixation Trial (DRAFFT) examining percutaneous fixation with K-wires versus volar locking-plate fixation in the treatment of adult patients with a dorsally displaced fracture of the distal radius, found no difference in the clinical outcome to patients. In addition, K-wires are less expensive, an average of £727 cheaper than plate fixation, and also quicker to perform[21]. As shown in **Figures 14a-b**, the mean average of wrist fractures with wires used for fixation across all trusts is 23.3%, while the mean average of wrist fractures with plates or screws was 22.5%[22].

[21] *Costa, M., Achten, J., Plant, C., Parsons, N., Rangan, A., Tubeuf, S., Yu, G. and Lamb, S., 2015. UK DRAFFT: a randomised controlled trial of percutaneous fixation with Kirschner wires versus volar locking-plate fixation in the treatment of adult patients with a dorsally displaced fracture of the distal radius. Health Technology Assessment, [online] 19(17), pp.1-124. Available from: https://www.journalslibrary.nihr.ac.uk/hta/hta19170/#/abstract*

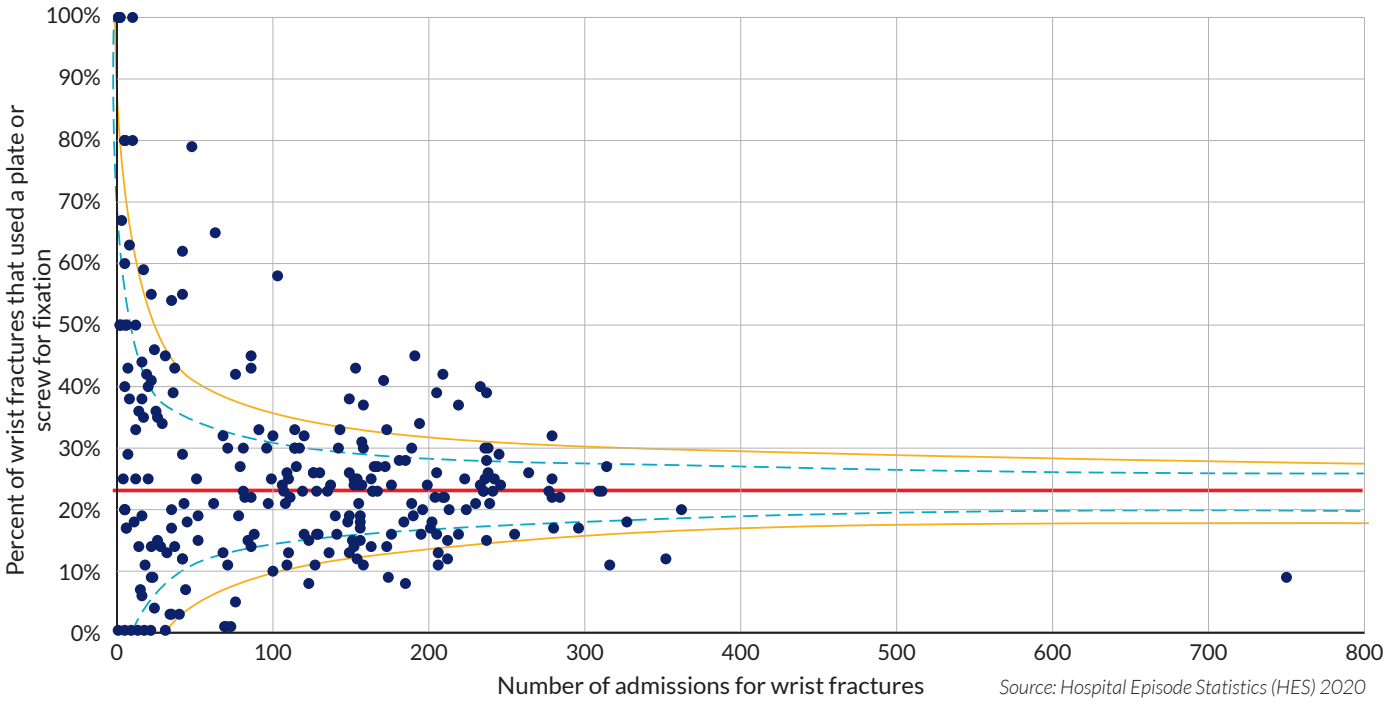
[22] *Hospital Episode Statistics 2020.*

Figure 14a. Percentage of wrist fractures that used a wire for fixation



Source: Hospital Episode Statistics (HES) 2020

Figure 14b. Percentage of wrist fractures that used a plate or screw for fixation



Source: Hospital Episode Statistics (HES) 2020

How funnel plots work

A funnel plot presents data for multiple organisations at a single point in time. The x-axis plots the volume metric (number of admissions for wrist fractures) and the y-axis plots the outcome metric (% of wrist fractures that used a wire/ plate or screw for fixation). Each of the black dots represent a trust. The mean value for the cohort (in this case 22%) is shown by the purple line.

The curved lines on either side show the likelihood of an outcome varying from the average due to chance alone:

- The inner curves (the light blue lines) show two standard deviations from the mean. 5% of values are likely to be beyond these curves due to chance.
- The outer curves (the dark blue lines) show three standard deviations from the mean. 0.3% of values are likely to be beyond these curves due to chance.

Accuracy and volume

When there is less volume (represented by the x-axis), the accuracy of calculating the variation due to chance is lower, therefore, the funnel curves are further from the average. When there is greater volume, the accuracy of calculating the variation due to chance is higher, so the funnel curves are closer to the average.

Management of extracapsular fractures of the hip in the over 65s is another area where there is significant variation of practice. NICE guidance states that the stable patterns (the most common types) should be operated on using extramedullary implants such as a sliding hip screws (and this is monitored by the NHFD), rather than intramedullary nails which are generally significantly more expensive. NICE research found that the average price across a number of manufacturers for the former was £252, versus £760 for short intramedullary nail fixation, and £1,175 for long intramedullary nail fixation[23].

A final area of variation is with hemiarthroplasty procedures, which need to be cemented. However, while the proportion of trusts which cement arthroplasties is on average quite high, a number of other techniques outside of bone cement are used in hemiarthroplasty, with potentially huge cost implications as a result. The costs for associated prostheses used, as identified by NHFD and GIRFT, range from £83 for cement implantation to £1,500 for other procedures, with around 30,000 of these operations carried out each year.

In terms of pain relief, NICE guidance states that the clinician should consider intravenous regional anaesthesia (Bier's Block) when reducing dorsally displaced distal radius fractures in adults[24]. However, many EDs do not have the right equipment for Bier's Block. Initial manipulation may still take place in ED depending on whether staff have the appropriate skills, equipment, facilities, space and time. It should be noted that one impact of the NICE guidance is that some trusts now have wrist manipulation pathways. For example, Nottingham University Hospitals NHS Trust has moved it into a different pathway and do wrist manipulation the morning after in the fracture clinic. This means wrist manipulation is always done using a Bier's Block (with X-ray available) in line with the guidance, making it less painful for the patient and ensuring that the procedure is done better, which may reduce the likelihood of needing K-wiring or internal fixation.

Within 12 months of the publication of this report, every Fracture Clinic Service should produce and institute an agreed written guideline for the management pathway from diagnosis to definitive care for each of the common fractures outlined below. Production of the guideline should involve a multi-professional approach with orthopaedic, nursing, plaster room and AHPs and take into account local facilities plus available NICE and professional guidelines.

One of the main barriers to implementing NICE recommendations is MDTs not coming together to discuss them. It is important for different specialties with a wide range of perspectives to come together and consider implementation in the context of the whole pathway. We therefore recommend that trusts take a multidisciplinary governance approach to audit existing recommendations. In certain situations, the decision to not implement a specific recommendation may be justified because a trust is doing something more current or effective than what is being proposed in the guidance.

[23] *National Clinical Guideline Centre, (2011) [The Management of Hip Fracture in Adults]. London: National Clinical Guideline Centre. Available from: www.ncgc.ac.uk*
[24] *NICE (NG38).*

Recommendations

Recommendation 7	**Using a multidisciplinary governance approach, trusts should run a quarterly baseline audit of recommendations relevant to orthopaedic trauma patients. Relevant NICE, GIRFT and BOAST recommendations should be reviewed and either implemented in collaboration across ICSs, where necessary, or non-implementation justified – see below for existing guidance and GIRFT advice.**
Findings	Throughout the deep dives, we observed variable implementation of NICE and BOAST guidance based on a review of key NICE and BOAST recommendations at deep dives. These recommendations and our advice with respect to them are supported by a 'Standards and Guidance Register'. See Appendix 3, p100.
Advice	This can then be considered by the Medical Director, and Integrated Care System (ICS), to identify ways to address any barriers to implementation at trust or system level. Governance and audit meetings for the orthopaedic trauma pathway should be used to justify to the quality committee the reason why some of the guidance is not being implemented (i.e., because they have something more effective in place).
Measurement	Trusts should evaluate whether their practice is in line with relevant NICE, GIRFT and BOAST recommendations on a quarterly basis. This could involve recording: • Current activity relevant to the recommendation. • Actions needed to meet the recommendation deadlines. • Names of responsible leads. Baseline assessment tools are available for NICE Guidelines. The BOA and OTS are jointly developing an audit tool to support trusts to review relevant recommendations.

Existing Guidance	GIRFT advice
NICE CG124 recommendation 1.6.7 on use of extramedullary implants	Surgeons should ensure appropriate use of extramedullary implants as part of evidence based surgical practice.
NICE NG38 recommendation 1.3.1 on use of Biers block when reducing dorsally displaced distal radius fractures in adults.	Trusts should ensure appropriate use of Biers Block. Multidisciplinary discussion with Emergency Medicine would be useful as initial manipulation takes place in ED.
NICE NG38 recommendation 1.4.6 for surgical fixation of dorsally displaced distal radius fractures in adults.	Surgeons should ensure appropriate use of K-wires as part of evidence based surgical practice.

Imaging

Imaging is key a component throughout the pathway of management of an orthopaedic trauma patient. It is integral in diagnosis, visualising operative procedures, monitoring the progress of healing and identifying complications. Its importance to the orthopaedic trauma patient merits this separate section on unwarranted variation in the manner in which the necessary imaging is provided and the way in which the generated imaging data and opinions are stored and shared. Imaging also has a role to play in injury prevention, notably secondary fracture prevention. As noted in recommendation 2 some trusts use imaging as the point of initial identification of a person who may benefit from further screening and secondary fracture prevention treatment.

Some aspects of imaging requirements for patients with orthopaedic trauma are subject of regulation, recommendations or guidelines from IR(ME)R, NICE, the BOASTs and Royal College of Radiologists.

Based on the GIRFT questionnaire data, we found unwarranted variations in the application of these with respect to:

- hot reporting;
- delegated reporting (often referred to as auto reporting);
- time to definitive reporting for CT;
- head-to-toe scanogram (scout view) when patient having trauma CT;
- imaging of scaphoid fractures.

Following on from the questionnaire, we conducted another survey to further explore this unwarranted variation in imaging and the manner in which imaging data is stored and shared across different providers. We found 16 different systems in use for viewing X-rays, CTs, MRIs etc, based on a total of 51 responses. We asked trusts where interpretations or reports were recorded for six different clinical staff groups or time points during the pathway. We then counted the number of times the system used by the radiologist was used by another staff group, or at other time points. No trust used the same system in all six parts of the pathway, and the system used by the radiologist was used by one other clinical staff group on average[25]. This other member of staff was always the radiographer. Consequently, it seems that it is not straightforward anywhere to view the image and alongside it see all the reports and opinions related to it.

Hot reporting

NICE guidance recommends hot reporting of imaging for patients with suspected fractures presenting in ED, meaning that definitive reports are provided at the time most clinically relevant to the patient[26]. This is beneficial as hot reporting provides definitive information required for diagnosis prior to treatment and following admission, rather than a provisional report which may contribute to a less accurate diagnosis and sub-optimal treatment. This happens in some trusts routinely, but not others. According to the questionnaire, 52.8% of trusts do not have hot reporting of plain musculoskeletal X-ray available in ED. This creates additional work for orthopaedic trauma or senior ED teams in two ways. Firstly, they will be asked to substitute for the absence of hot reporting providing opinions while the patient is at their first attendance. Subsequently they will need to review any later radiology reports after treatment to establish whether the treatment reflects the findings of the radiology report. We are very conscious that there are capacity barriers to delivering hot reporting, and therefore would encourage trusts to increase hot reporting as capacity allows; or, if not possible, to ensure the definitive opinion is available, at latest, before or at the fracture clinic (virtual or face to face). A full discussion of the capacity challenge in radiology is provided by the GIRFT radiology report, along with discussion how reporting capacity can be managed through options including network-based reporting and outsourcing.

Delegated reporting (often referred to as auto-reporting)

Auto-reporting implies that the radiology department does not issue a clinical report but rather an 'auto-report' reminding the responsible consultant that they should record a clinical impression of the images to inform treatment. We found that trusts were often unclear as to whether images were being auto-reported and also found variation in how this was monitored and how clinical impressions were recorded. This is particularly happening where a patient receives imaging as an inpatient. Unlike in outpatients, where the clinical impression is recorded and communicated back to primary care in the clinic letter, there is no immediate need to communicate the information externally, meaning recording is less likely. We have noted that this variation in practice presents a potential risk of contravening the IR(ME)R[27] because if trusts are unclear about

[25] *Mean was 0.94*

[26] *NICE (NG38).*

[27] *The Ionising Radiation (Medical Exposure) Regulations 2017, UK Statutory Instruments, 2017 No. 1322.*

procedures for reporting there is a risk that a clinical impression will not be recorded. Furthermore, the IR(ME)R explicitly state that written procedures must be in place for the carrying out and recording of an evaluation for each imaging exposure. Trusts should refer to sections 6(1), 12 (9) and schedule 2(j) and the guidance that accompanies IR(ME)R[28] for the detailed requirements around clinical evaluation of exposures. While there are variations on who provides the report or clinical impressions of particular types of imaging, what is of paramount importance is that in individual institutions everyone is clear about their role and that all images have an associated report or clinical impression recorded. We have seen notable examples of good practice, including a nurse practitioner at one trust taking responsibility for ensuring that a clinical impression is recorded by the responsible consultant in the clinical record.

Time to definitive reporting for trauma CT

CT is used extensively in trauma care for patients with suspected high-energy pelvic fractures, suspected multiple injuries or blunt major trauma[29]. Most trusts provide a provisional report followed by a definitive report. The times for these reports to become available vary considerably; with the definitive report often not available until after the initial clinical decision making has taken place. **Table 4** shows that only 44.1% of trusts have the definitive written report available within an hour after trauma CT. For this reason, the Royal College of Radiology's view is definitive reports should be available earlier, which was a subject of discussion in the GIRFT radiology report.

Table 4. Availability of provisional and definitive report after trauma CT

Metric	England				
	Within 1 hour	Within 12 hours	Within 24 hours	Outside 24 hours	73 questionnaires
Trauma CT reporting					
When a Trauma CT is obtained, is the provisional written report available	85.3%	11.8%	2.9%	0.0%	68 responses (93.2%)
When a Trauma CT is obtained, is the definitive written report available	44.1%	42.6%	11.8%	1.5%	68 responses (93.2%)

Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

This variation is happening in both trauma units and trauma centres. In trauma centres, there are more often trainee radiologists and provisional reports may be provided rapidly but definitive approval or amendment may not occur for 24 hours. In trauma units, a definitive report may be available more rapidly. We understand that this is achieved by outsourcing the reporting. Ideally, we should have early definitive reporting with the potential for discussion of findings between the reporter and the managing clinicians[30].

A key factor driving delayed CT reporting is the availability of consultant radiologists at night. In some trusts, there may be limited or no consultant radiologists available at night, meaning trainees provide provisional reports followed by definitive reports from the consultant the next day. These workforce shortages in radiology are further discussed in the GIRFT radiology report[31] .

[28] *DHSC (2018) Guidance to the Ionising Radiation (Medical Exposure) Regulations 2017*

[29] *NICE (NG37).*

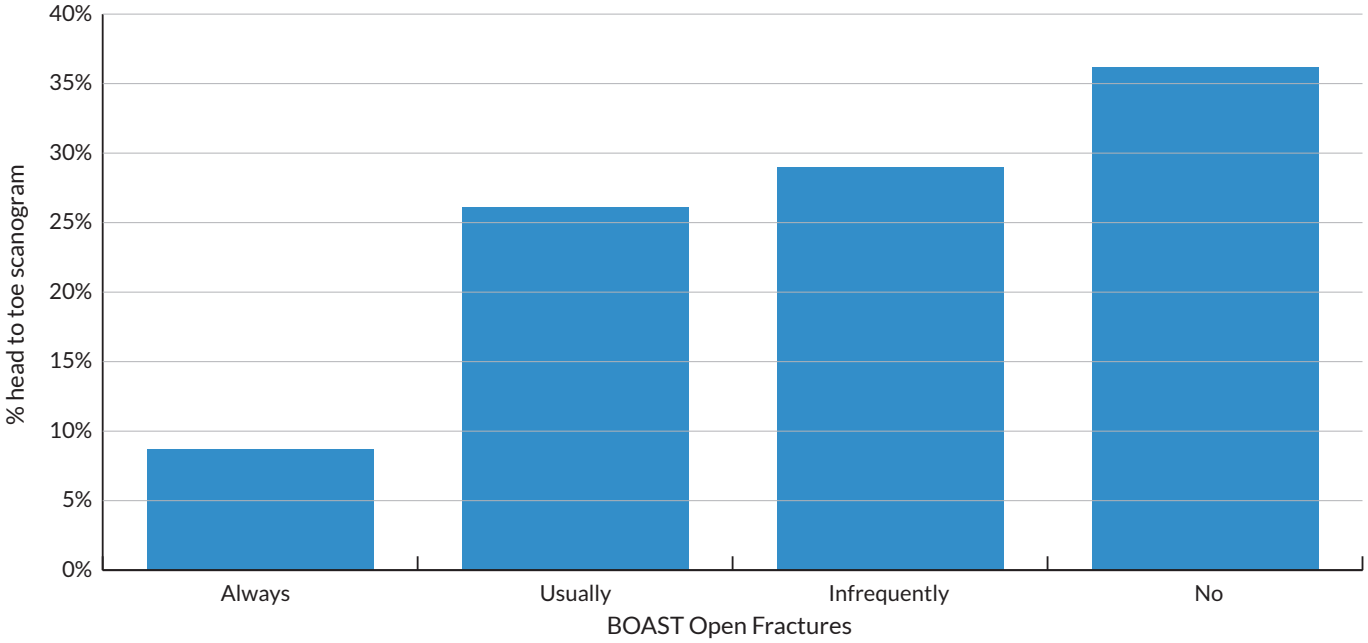
[30] *The Royal College of Radiology. Standards of practice and guidance for trauma radiology in severely injured patients (standard 12). 2019. Retrieved from: https://www.rcr.ac.uk/system/files/publication/field_publication_files/bfcr155_traumaradiol.pdf*

[31] *GIRFT. Radiology: GIRFT Programme National Specialty Report. 2020*

Whole body CT of multiple injuries

NICE guidance recommends a whole-body CT scanogram for adult patients with blunt major trauma and suspected multiple injuries to allow an early assessment of peripheral injuries and the need for the standard vertex to pelvis sequences to be extended. This is to avoid unnecessary repositioning of patients or the need to return for subsequent scans[7]. This recommendation is met routinely in some trusts but is not current practice in others. **Figure 15** shows that most trusts do not always include whole-body scanograms when obtaining trauma CTs. In some trusts that are not achieving this recommendation, this is a consequence of the physical positioning of the CT scanner, which can make a single pass whole-body scanogram impractical.

Figure 15. When a trauma CT is obtained, does this routinely include a head to toe scanogram?



Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

Imaging of scaphoid fractures

NICE guidance recommends that MRI is considered for first line imaging in people with suspected scaphoid fractures[32]. The questionnaire highlighted only 13% of trusts use MRI as the primary investigation in people with suspected scaphoid fractures, while 84.1% use plain x-ray and 2.9% use CT scan. This represents a low compliance with a NICE recommendation that was made five years earlier. The main barrier to delivering this recommendation is MRI capacity, for which there is a recognised capacity gap, as illustrated by the Richards review recommendation that MRI capacity needed to grow capacity at least in line with growth in demand[33]. As such, we encourage this goal to be worked towards as far as possible based on capacity within trusts and local systems.

[32] *NICE (NG38).*

[33] *Richards (October 2020) DIAGNOSTICS: RECOVERY AND RENEWAL Report of the Independent Review of Diagnostic Services for NHS England*

CASE STUDY

Radiology input into bone health

Lewisham and Greenwich NHS Trust

When staff report X-rays, the radiographers and radiologists put any abnormal X-rays – whether fractures or other significant abnormalities - into a folder in PACS which is checked every day by clinicians from ED. This is to prevent missed fractures and missed significant abnormalities such as infection or bone tumours.

They also refer patients directly to ED if they see any patient who has been sent by the GP for an X-ray which has a significant abnormality such as a fracture, infection, or possible tumour. They are able to refer from radiology to ED if they see an urgent finding on an X-ray and this shortens the patient journey.

The trusts now has a low waiting time for X-ray reporting which means patients wait short times to get their reports, which ultimately makes the process quick and efficient. There are low waiting times for reports at the Lewisham site in particular, because a lot of reporting is insourced.

Recommendations

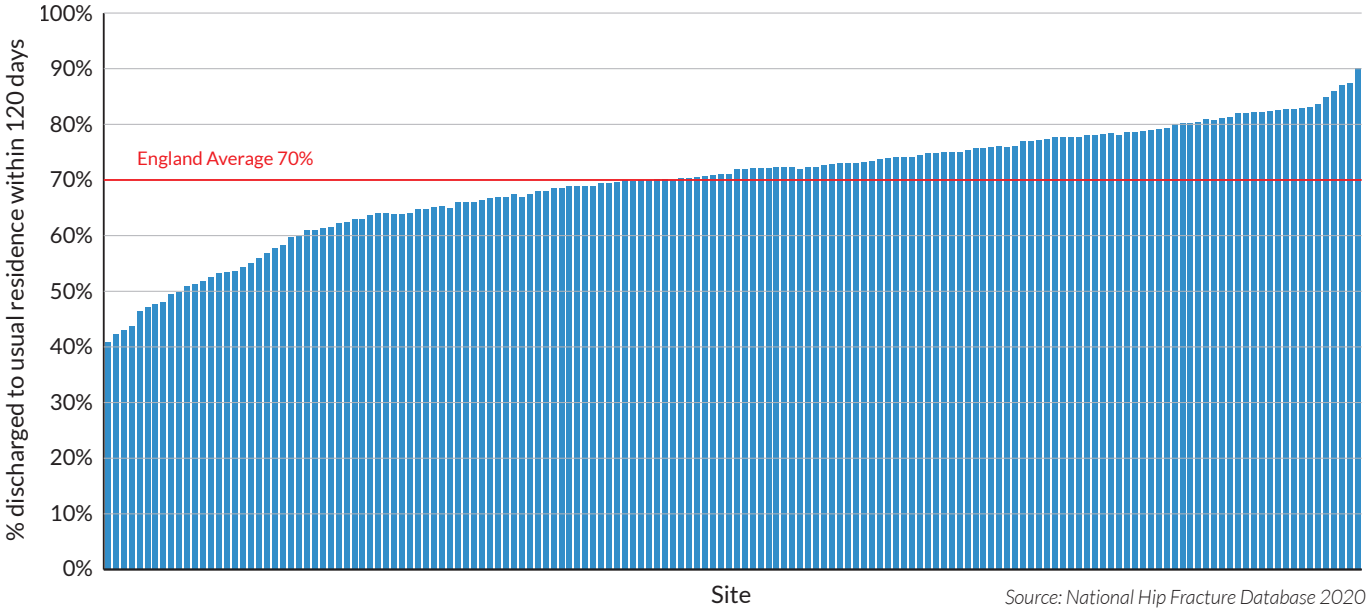
Recommendation	**See Recommendation 7.** Medical directors should ensure that the BOAST guideline below is reviewed and either implemented or non-implementation justified.
Findings	Imaging was a key area where we saw variable implementation of NICE guidance through the deep dives. We recognise there are resourcing issues behind these and would thus encourage trusts to consider what improvements are achievable within current resources.

Existing Guidance	GIRFT advice
NICE NG38 recommendation 1.1.9 on use of hot reporting.	Trusts and systems should ensure the definitive report is available at a time clinically relevant to the patient. • Ideally, as NICE recommends, via hot reporting in ED. • Alternatively, reporting should happen before or at the virtual or face to face fracture clinic.
NICE NG38 recommendation 1.2.3 on use of MRI as first line imaging for Scaphoid fractures	Trusts and systems should increase use of MRI as first line imaging for suspected scaphoid fractures. We recognise MRI capacity is a limiting factor in achieving this and would encourage trusts and systems to increase the use of MRI as first line as capacity allows, in the context of increasing MRI capacity across the system, e.g., following the Mike Richard's review.
NICE NG37 recommendation 1.2.8 on use of whole-body CT scanogram for adult patients with blunt major trauma and suspected multiple injuries	Trusts should increase use of whole-body CT scanogram where this is physically possible. Where it is currently impractical to do so the CT scanner should be repositioned when it is next replaced.
NICE CG124 recommendation 1.1.1 on imaging options for occult hip fracture	Trusts should offer an MRI if a hip fracture is suspected regardless of negative X-rays of the hip of an adequate standard. A CT scan should be considered if an MRI is not available within 24 hours or is contraindicated.
RCR guidance: Standards of practice and guidance for trauma radiology in severely injured patients, Standard 12.	Trusts should ensure that on-call consultant radiologists provide a final report on the SIP within an hour of MDCT image acquisition.

Length of stay

Where appropriate, orthopaedic trauma patients should be treated in day surgery to avoid unnecessary admissions. For patients who are admitted and undergo orthopaedic trauma procedures, there is wide variation in length of stay (LoS). The variation is present when reviewing Hospital Episode Statistics (HES) data and NHFD data. According to NHFD data in **Figure 16**, an average of 70.6% of patients were discharged to their usual place of residence within 120 days of admission. However, in some trusts this number was as low as 28.4%. The causes of variation in LoS are multifactorial. In the light of new evidence trusts should compare the steps on their own pathways of care with those that are demonstrably instrumental on LoS. It is also useful for trusts to look at their own data longitudinally to assess how their efforts at addressing this challenge are changing over time and to identify potential for improvement. Trend data can also be used to examine the impact of any known change to practice.

Figure 16. 120-day return to original residence



Source: National Hip Fracture Database 2020

Reducing LoS will involve the full multidisciplinary team with acute care and therapists working within community rehabilitation. With this in place, we can expect patients to benefit from reduced time spent in hospital, and for bed capacity to be released in provider trusts.

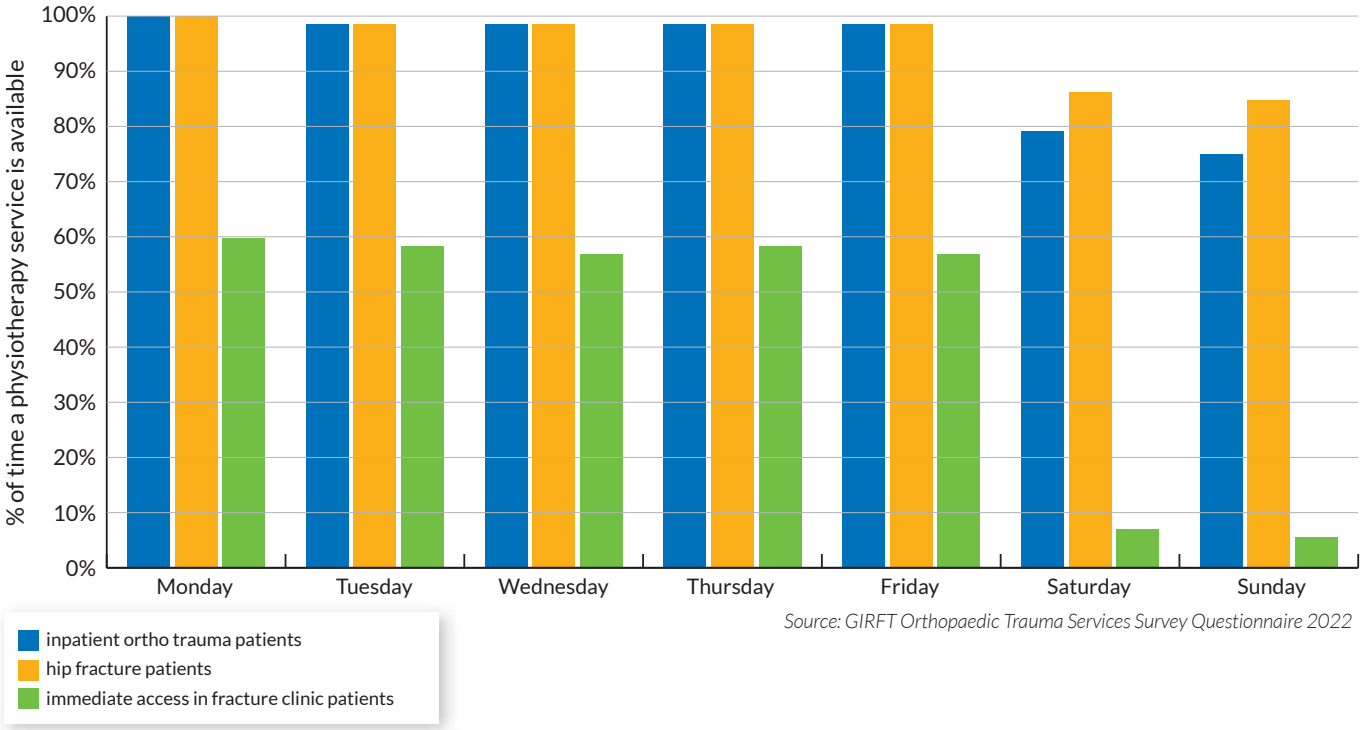
Some variation is warranted and driven by procedure and case mix. Beyond this, there are a number of variables within the pathway that can reduce LoS if best practice is adopted, including those described in the sections below.

Constructive first step of the pathway: Ensuring that the first step of the admitted pathway involves admission to the orthopaedic ward or outreach from the orthopaedic team where patients are outlying on other wards as shown in **Figure 7** (page 34). This should include early discharge planning involving senior therapists. This is analogous to the now common approach in elective practice where discharging planning begins at an early stage in the pathway.

Time to surgery: Reducing the time to surgical intervention. When there is a delay to surgery, the LoS increases by an amount greater than the delay to surgery itself. According to NHFD, in 2019 an average of 69.5% of patients had surgery on the day of, or day after, admission – which is the timeline recommended by NICE guidelines. Delays to surgery may be consequent upon a general lack of resource or an inability to deal with fluctuations in demand. As shown in **Figure 10** (page 39), over 80% of trusts cite cancelling elective work as a policy to deal with peaks and troughs.

Post operative mobilisation: A key step in preparation for discharge is optimal mobilisation. It is evident from the REDUCE study that the ability to mobilise a patient promptly after surgery can significantly influence LoS. In hospitals where more than 90% of patients were mobilised by the day after surgery, each patient achieved a 2-day shorter LoS compared to hospitals where less than 70% of patients were mobilised quickly. Similarly, attendance by a physiotherapist was also associated with a reduced LoS. Physiotherapy and occupational services are essential to mobilise patients, however, the provision of these services may not be uniform throughout the week or available to all groups of patients equitably. **Figure 17** shows the variation in physiotherapy service provision with different groups of patients and on weekends in comparison to weekdays. According to the questionnaire responses, physiotherapy service provision reduces by approximately 20% for orthopaedic trauma inpatients, 10% for hip fracture patients and 40% for patients with immediate access in fracture clinics on the weekend in comparison to weekdays. Similarly, discharge or progress in mobilisation may be dependent upon acquisition and review of further imaging. Consequently, delays in obtaining imaging can delay discharge.

Figure 17. On which days are physiotherapy services currently provided to the following patients?



Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

Medical care: Providing appropriate medical care for patient and taking orthogeriatric provision as an indicator of that, as shown in **Figure 3** (page 29), less than half of the trusts that responded to the questionnaire have their non-hip fracture patients seen routinely by orthogeriatricians. The REDUCE study found that in hospitals where all patients received orthogeriatric assessment within 72 hours of admission, there was a 1.5 day reduction in LoS in comparison to other hospitals where not all patients were assessed within this window.

The analysis of the relationship of co-morbidities to length of stay may be confounded by some of the less well patients leaving acute care rapidly when they return to a nursing home, as this group will have less rehabilitation potential. The most fit patients will also have short LoS, meaning the group of patients in the middle will have the most potential to gain. Senior support for the patient in the post-operative period could potentially be provided by clinicians from a variety of backgrounds. It would seem most likely that those involved in the patient's acute period – that is surgeons, anaesthetists, and orthogeriatricians – would be the most likely source of such support. According to the questionnaire responses, only 11.8% of trusts have post-operative patients reviewed routinely by an anaesthetist after they have left recovery, while 76.5% have patients reviewed infrequently and 11.8% do not have patients reviewed by an anaesthetist.

CASE STUDY

Discharge to assess

Barnsley Hospital NHS Foundation Trust

The Discharge to assess (D2A) pathway aims to reduce length of stay for patients and support them to return home when medically optimised[1, 2]. The pathway moves away from functional assessments taking place in hospital to this being done in the patient's home.

The D2A team at Barnsley was set up by inpatient medical occupational therapists who were redeployed in the community. From December 2020 the orthopaedic inpatient OT team trialled following patients home and completing the D2A visit. This meant that the therapist already knew the patient, which was beneficial and reassuring for patients. This was continued and the team has now completed the majority of the D2A visits for orthopaedic patients (trauma and elective).

On the D2A visit they aim to arrive at the patient's house within 1-2 hours of them being discharged. They assess the patient's mobility and transfers within their home, check discharge letters and medication, review functional tasks and refer on for support. This can include referral for support with Activities of Daily Living (ADL) and ongoing occupational and physiotherapy to progress mobility/transfers and independence. If a patient is assessed at home and is deemed as not safe or able to manage they can be referred for a 'step-up' bed (an intermediate care bed which can be at the rehabilitation unit or a spot purchased bed within a care home).

The D2A pathway is across seven days. However, due to funding the orthopaedic team only cover Monday - Friday so patients discharged at the weekend would be seen by the D2A team. The D2A team at Barnsley is solely made up of occupational therapists but the trust is currently looking to expand the service to include a physiotherapist.

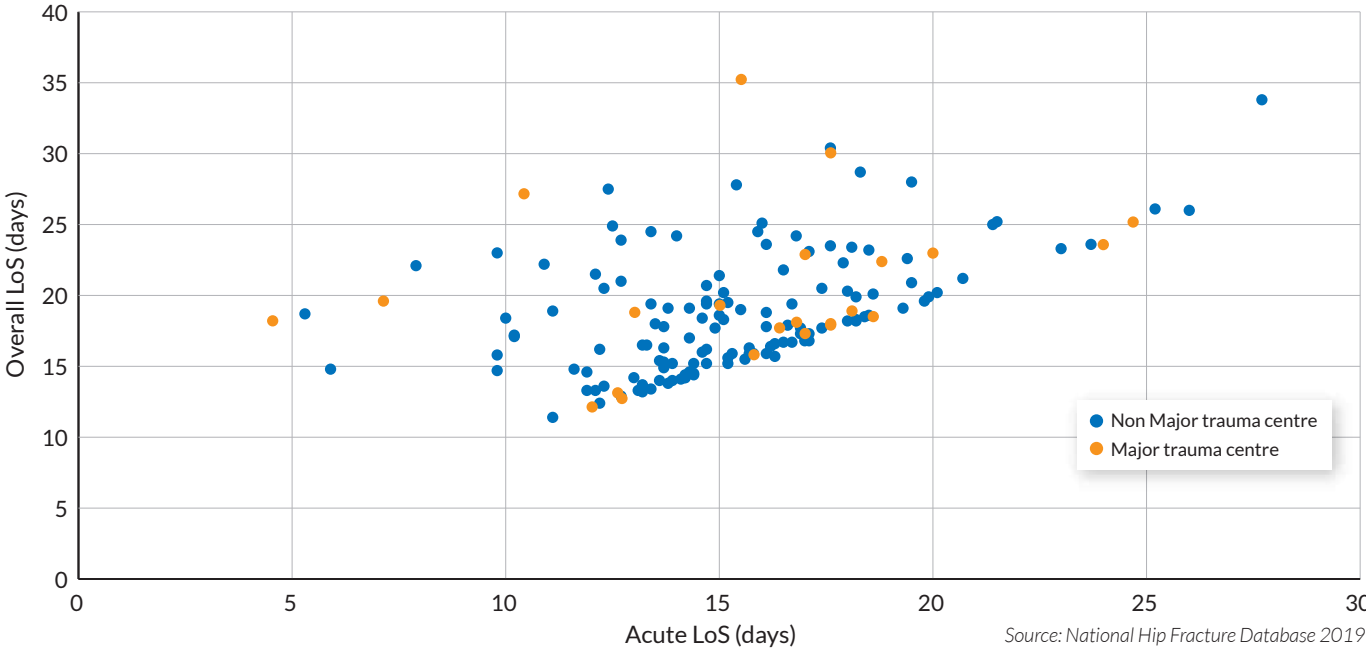
[1] *Department of Health and Social Care (DHSC) Hospital discharge and community support guidance 2022. Retrieved from: https://www.gov.uk/government/publications/hospital-discharge-and-community-support-guidance/hospital-discharge-and-community-support-guidance#annex-c-pathways-for-the-discharge-to-assess-model*

[2] *Department of Health and Social Care (DHSC), Directors of Adult Social Services (ADASS) and NHS England Quick Guide: Discharge to Assess. Retrieved from: https://www.nhs.uk/NHSEngland/keogh-review/Documents/quick-guides/Quick-Guide-discharge-to-access.pdf*

Discharge: Discharging a patient to their home immediately from admitted care, rather than to a step-down facility, can lead to a greater acute LoS but shorter overall LoS. According to NHFD data from 2019, sites with longer acute LoS have a longer overall LoS. The average difference between acute and overall LoS is 3.4 days in non-major trauma centre sites and 4.47 days in major trauma centres. Efforts to achieve a shorter LoS when appropriate should align with the framework of aspirations of Universal Personalised Care, ensuring that patients receive care at the right time in the optimal care setting[34].

[34] *NHS. Universal Personalised Care: Implementing the Comprehensive Model. 2019. Retrieved from: https://www.england.nhs.uk/wp-content/uploads/2019/01/universal-personalised-care.pdf*

Figure 18. Overall LoS compared to acute LoS



Source: National Hip Fracture Database 2019

Community: Achieving effective collaboration with the inpatient and community rehabilitation providers can make earlier discharge more achievable and avoid duplication in rehabilitation care provided. The REDUCE study found that community rehabilitation attendance at governance meetings increased LoS, however, the reason behind these findings are unclear. One possible reason could be that community rehabilitation teams are focused on ensuring that a patient is discharged to the most suitable place, which emphasises the need to get them involved as early as possible. The section below provides case studies of trusts that have reduced LoS by adopting best practices described above. We encourage providers and systems to perform a gap analysis and identify improvements that they think would be beneficial in their services.

CASE STUDY

Peri-operative nurse practitioners

South Tees Hospitals NHS Foundation Trust

The peri-operative nurse practitioner role (see Appendix 1 on page 99 for job description) has been in orthopaedics at South Tees for several years. The role was introduced as a bridging gap between wards and junior doctors as there were gaps in the junior doctor rota. There are now 10 practitioners in post. The majority have completed their physical assessment skills at degree level and non-medical prescribing course. They are qualified nurses with experience in orthopaedics, critical care, and acute medicine. They work closely with both nursing and medical teams to provide ward based clinical care for orthopaedic patients including clerking of new patients, daily assessment, ordering of appropriate investigations, initiation of treatment where appropriate and participation in ward rounds.

Some teething problems were reported, especially relating to the role of the doctor. The senior medical team became very reliant on the practitioners. The team is now clear as to what a practitioner can and cannot do; the message reiterated at every doctor induction is that the practitioners are there as first point of contact for ward staff undertaking appropriate duties to prevent unnecessary calls on junior medical staff.

CASE STUDY

Reducing length of stay for hip fracture patients

Queen Elizabeth Hospital King's Lynn NHS Foundation Trust

As soon as a patient with femoral fracture arrives in A&E, the team is made aware and a patient is admitted to the ward after being assessed by orthopaedics in A&E. Early recognition of patients speeds up the admission to the ward.

The A&E team is fully aware of the protocol in place to give patients a nerve block as soon as the fracture is diagnosed and most A&E staff are trained in administering nerve blocks.

The trust has a dedicated team of junior doctors and a nurse specialist who are led by a consultant geriatrician to assess all patients admitted with femoral fracture from day one, making sure that patients are optimised for theatre. This practice reduces the wait for theatre and therefore reduces complications and shortens LoS.

On the ward, there is a dedicated team of therapists who get the patient up from day one post surgery. They also give instructions to the rest of the team on patients' mobility.

An anaesthetic standard of care for fractured neck of femur patients has been introduced. The key elements included:

- fascia iliaca nerve blocks for all patients, including those having their operation under a spinal;
- ensuring haemodynamic stability intra-operatively by use of a vasopressor infusion, and;
- a haemoglobin check in recovery. If the patient's haemoglobin was below threshold a transfusion would be commenced before returning to the ward.

These three interventions have been simple to incorporate into everyday practice for the anaesthetic and recovery team. Undertaking these practices has led to a significant reduction in length of stay for hip fracture patients from 21.0 days in 2016 to 13.4 days in 2021 (NHFD).

CASE STUDY

Reducing length of stay with a fractured neck of femur (NoF) integrated pathway

Watford General Hospital, part of West Hertfordshire Teaching Hospitals NHS Trust

The integrated NoF pathway was implemented in 2014. Please see Appendix 2 on page 99 for the local guideline.

Physiotherapy: There is an established 7-day physiotherapist service where day 1 post-operation #NOFs are prioritised throughout the department to ensure they are seen. Having the Hb checked in recovery allows for early blood transfusions, reducing the impact on day 1 mobilisation.

The goal is for each patient to receive at least 120 minutes of physiotherapy in the first week which helps early discharge planning. Close working MDT ensures all referrals are ready to be sent as soon as appropriate to minimise delay of discharge once medically fit.

Care of the Elderly (CoE): A dedicated the CoE team (aside from the orthopaedic team) delivers medical care patient reviews for NoF patients. Implementing these practices and pathways has enabled the trust to achieve a 13.9 day average length of stay for NoF patients (Model Health System data Q4 2021/22). This is best quartile performance and below the national median.

Recommendations

Recommendation 8	**Trusts should ensure that the pathway of care for the older or frail orthopaedic trauma patient is monitored and modified with respect to the 25 organisational factors highlighted in the REDUCE study as important to improving patient outcomes and reducing length of stay.**
Findings	The BOA Standard *The care of orthopaedic trauma in the older or frail orthopaedic trauma patient*[35], states that the care of orthopaedic trauma in the older or frail patient is dependent on coordinated multidisciplinary working to manage the physical injury, co-morbidities and rehabilitation, including measures to prevent further injury. In addition, it reinforces the principle that such care should not be restricted to hip fracture patients but should be applied to all of the older frail. Recent analysis from the REDUCE study shows that several organisational factors can improve patient outcomes, including length of stay. These findings highlight the importance of representation from all teams and departments involved in the multidisciplinary care pathway and admission to an appropriate ward in order to deliver high-quality care to all orthopaedic trauma patients. It would be anticipated that patients with other fractures would benefit in a similar way.
Advice	REDUCE shows organisational factors and best practices can have a particularly significant impact in terms of minimising patients' length of stay and/or reducing mortality. Trusts should audit and adopt these practices as consistently as possible, within current resources. The REDUCE toolkit may also identify a business case for increased staffing, for example to physiotherapy provision at weekends. The practices identified by REDUCE includes: **Pre-operative stage** • Admission to a dedicated fracture ward. • Proportion of patients given a nerve block (with suitable fracture pattern). **Operative stage** • Protocols in place for intra-operative care bundle. • Patients receiving surgery within 36 hours of admission. • Anaesthetic lead for fracture care with time specified in their job plan. **Post-operative stage** • Patients mobilised the day after surgery. • Falls assessment during admission. • Orthogeriatric support time by a specialist nurse. • Prompt assessment by an orthogeriatrician within 72 hours of admission.
Measurement	Trusts should monitor trends for the following outcomes in hip fracture patients before and after improvements to the organisational factors, using the NHFD where applicable: • Length of stay • Readmissions • Mortality • EQ-5D (if available)

[35] *British Orthopaedic Association. BOA Standard: The care of orthopaedic trauma in the older or frail orthopaedic trauma patient. 2019. Retrieved from: https://www.boa.ac.uk/static/a30f1f4c-210e-4ee2-98fd14a8a04093fe/boast-frail-and-older-care-final.pdf*

Staffing

In addition to the fluctuations in staffing levels and the make-up of teams between weekdays, nights, and weekends, there are some general shortages of staff, in particular specialties involved in the patient pathway.

- Radiographers are in shortage in a number of areas. They are integral to the pathway both at the stage of initial diagnosis and in theatre. The majority of theatre cases in orthopaedic trauma are carried out under image intensifier control.
- There is a national shortage of orthogeriatricians and, as shown in **Figure 3** (page 29), the provision of routine orthogeriatrician visits decrease significantly over the weekend. Many patients undergoing surgery in a wide range of specialties are frail or elderly. The need for surgeons to work alongside geriatricians was first recognised on a large scale in relation to hip fracture patients. However, it is clear that patients benefit from collaborative management well beyond this group. Consequently, geriatricians with an interest in surgical patients are sought after. In the long term, this may be addressed by training but, in the short term, units should have strategies to best utilise the resources they have available, and this requires collaboration between surgeons, anaesthetists, geriatricians and often the support of the advanced nurse practitioners (ANPs).
- Operating theatre scrub staff with experience in orthopaedic trauma are in demand. There are shortages in various areas of the country.

Other issues identified during the deep dives relate to the support given to the ward junior doctors. The ward junior doctor is often the final common pathway for a number of their senior colleagues. To work effectively they need the support of their senior surgical, anaesthetic and geriatric colleagues. The level of this support will vary significantly from one day to another with particular differences being exhibited between day and night and weekdays and weekends. This inconsistency in support is exacerbated by the fact that the junior doctors generally move through their jobs every four months. The members of the permanent staff can help provide the corporate memory and continuity of practice to back-up the ward junior doctors. This is something that nurse practitioners or orthopaedic trauma coordinators seem well-placed to provide in some units as demonstrated in East Sussex (page 53), Bradford (page 49), York and Scarborough (page 55) case studies.

A specific area of potential concern relates to the consequences of the Covid-19 pandemic on the workforce. Orthopaedic surgeons have been surveyed by the BOA but there is no reason to suppose that similar problems do not exist in other specialties. It was found that 25% of surgeons aged over 50 were considering bringing their retirement date forwards[36]. Disenchantment with the hospital organisation and government was given as the top reason. 10% of orthopaedic trainees believe that their certificate of completion of training (CCT) date is already delayed and a total of 48% think that it may be delayed[21]. Of those consultants currently practising, 50% suggested a willingness to work more hours than they currently do[21]. There was, however, concern relating to extra work and pension penalties and comments that some trusts had an arbitrary cap on the number of PAs that can be worked.

Recommendations

Recommendation	**See Recommendation 7.** Medical directors should ensure that the BOAST guideline below is reviewed and either implemented or non-implementation justified.
Findings	In addition to the fluctuations in staffing levels and the make-up of teams between weekdays, nights, and weekends, there are some general shortages of staff in particular specialties involved in the patient pathway. Specifically, these shortages are most commonly found amongst: radiographers; orthogeriatricians; and operating theatre scrub staff with experience in orthopaedic trauma. The Covid-19 pandemic has exacerbated staffing issues, and evidence suggests 25% of surgeons aged over 50 were considering bringing their retirement date forwards.

Existing Guidance	GIRFT advice
BOAST care of the older or frail orthopaedic trauma patient, point 1	Trusts should ensure there are explicit pathways providing multidisciplinary support for frail orthopaedic trauma patients in the perioperative period 24/7. To achieve this, trusts should review staffing arrangements for the orthopaedic trauma pathway. This should consider how best to use existing staff resources across all divisions.

[36] *British Orthopaedic Association. BODS/BOA Survey of impact of COVID-19 on UK orthopaedic practice and implications on restoration of elective services. 2020*

Repatriation

Tertiary centres around the country, regardless of specialty, can find it difficult to return or repatriate patients to the hospital that referred them. This is seen in orthopaedic trauma care in Major Trauma Centres (MTCs), which puts pressure on bed capacity, and is likely to affect the time to surgery for patients who do not have major trauma. We know this is a problem because bed capacity is a major constraint at both MTCs and referral hospitals, which are required to manage this based on the expectations placed on them. These expectations vary; MTCs are obliged to accept referrals, reflecting the clinical urgency for individual patients with severe injury, while referring hospitals are not obliged to accept requests from the MTC to repatriate patients, as there is not the same clinical urgency at stake for an individual patient who no longer has a severe injury.

Previous approaches to this problem have had varying success, principally because system level decision-making is needed to resolve it effectively. Pre-pandemic, repatriation agreements were often in place but were inconsistently prioritised and adhered to due to overall demands on providers' bed bases. During the pandemic, escalation protocols existed via regions to manage pressure on the system overall, but these are no longer in place.

We anticipate that Integrated Care Systems (ICSs) will be able address this problem. It is likely that local capacity issues will continue. However, the new system level management provides an opportunity to consider where the collective system should provide capacity for patients who no longer need to be in an MTC. This could include:

- ensuring sufficient capacity is available in the MTC in order to avoid the need to repatriate;
- ensuring capacity is available in referring hospitals to accept requests from the MTC to repatriate;
- as a last resort, implementing an automatic repatriation within a set time of the referral being made.

At this time, we have chosen not to provide a specific recommendation on this issue as it was not part of the remit to consider the generality of major trauma services within this review.

Orthopaedic trauma information systems

There is wide variation in the systems that are used across different trusts, stemming from a history of trauma units developing their own systems followed by the development of commercial solutions.

Our trauma systems survey highlighted the following:

- On average trusts used two systems[37] and 53.06% of trusts report using multiple systems to manage the trauma pathway.
- On average, three systems[38] were in use at trusts using more than one system. However, some trusts used up to six systems.
- 69.77% of trusts using more than one system said those systems did not communicate satisfactorily with each other.
- Only 42% of trusts said other specialties made notes on the same system when they were caring for an orthopaedic trauma patient. 42% said other specialities did do this, and 16% provided some other response.

The fast-paced nature of the orthopaedic trauma service means that clinical teams require highly responsive information systems to schedule and manage patients, as well as monitor treatment targets and outcomes. Orthopaedic trauma information systems are clinical software designed to provide this. These systems utilise international coding standards for fractures, which are required for peer reviewed literature. Practically, these systems help with handovers and can be used to identify diagnostic data for outpatient clinics. The coding system can often be mapped to International Classification of Disease (ICD) coding, and clinicians are able to access the data by selecting a diagnosis in the system.

Electronic Patient Record (EPR) systems are used to provide a digital platform for clinical records, enabling data to be shared and used more effectively. The accelerated roll-out of these EPR systems is one of the commitments in the NHS Long Term Plan to support NHS digitalisation[39]. We have heard from many trusts that EPR and orthopaedic trauma systems are not integrating well. As a result, IT departments have found it difficult to encourage trauma units to adopt EPR systems and trauma units have needed to run orthopaedic trauma systems separately to the trust's EPR system.

This could plausibly reduce the effectiveness of EPRs in facilitating integrated data collection across the NHS. Furthermore, it duplicates data collection and results in administrative staff needing to copy information from one system to another. It also presumably creates a risk that data derived from EPRs, such as HES, will not reflect the information being recorded and used by the orthopaedic trauma teams. The ability for secondary users of the data, such as GIRFT, to benchmark services to guide improvement may therefore be adversely affected.

There is a need for trusts' IT departments to collaborate with each other, and for colleagues in national bodies to identify a potential solution to the variation in orthopaedic trauma systems in use. Our engagement as part of developing this national report will explore this.

Another issue, which complicates current initiatives to improve care, is an almost complete lack of follow-up data. There may be data relating to adverse consequences in mortality, readmission within 30 days, and surgical site infections (SSI) which are naturally important to know. However, the bulk of orthopaedic trauma care is directed at the relief of pain and restoration of function, whether these objectives are achieved is not part of routine data collection. It would seem reasonable that a patient and their doctor when embarking on treatment should be in a position to balance the potential beneficial consequences against those potential deleterious consequences on the basis of real data. There are some trusts, such as Portsmouth Hospitals NHS Trust, which specifically collect 120-day follow-up data for their hip fracture patients. For some other trusts, such data is collected as a part of the follow-up process for a fracture liaison service when a compliance with bone health treatment is monitored. Hip fracture patients are seldom seen in follow-up clinic. Many other patients with fractures are followed in clinic until post-operative complications have been excluded and there is progress to fracture healing. However, there is generally no patient reported outcome recorded or other data that would allow quality-control.

[37] *Rounded from 1.92*

[38] *Rounded from 2.73. responses meaning 'no' were removed to count positive answers only in those columns, meaning it was possible to count positive responses only across several columns.*

[39] *NHS. The NHS Long Term Plan (p 36). 2019. Available from: https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf*

Recommendations

Future Work	Working with the BOA/OTS we will engage with trauma units and suppliers to identify how best to deliver the information requirements of the orthopaedic trauma pathway. These include: • producing operating lists; • facilitating handovers; • real time information sharing between units and hospitals - collation of national information on time to surgery by diagnosis and overall demand into trauma services; • managing theatres shared with other specialities; • recording clinical interpretations and reports on the same platform as diagnostic images.
Findings	Trusts have met their information needs the best they can by developing or purchasing new systems locally, on a piecemeal basis. As such, most trusts now use multiple systems to manage the care of people with orthopaedic trauma. These systems do not usually communicate well with each other. Furthermore, because different divisions within the same trust will use their own systems, clinical staff will be looking at different 'versions of the truth' about the same group of patients. This is inefficient for the teams providing care and creates patient safety risks. It also prevents collation of national data on time to surgery and demand.

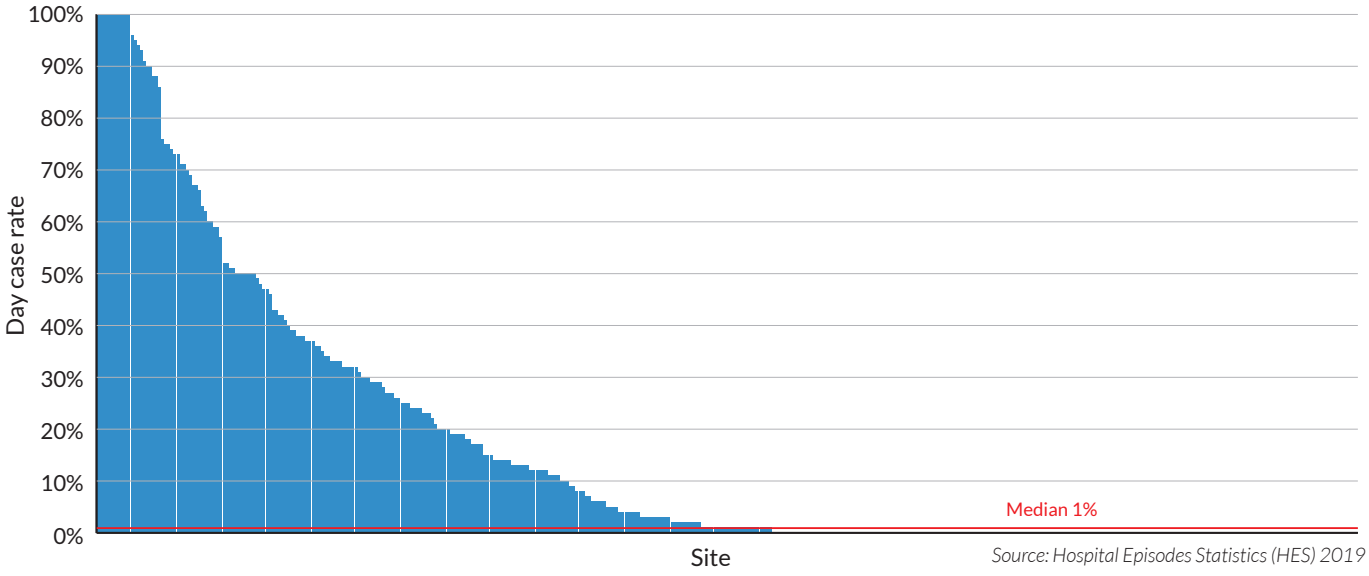
Operative management of ambulatory trauma and provision of day case surgery

The term ambulatory trauma is commonly used to refer to two groups of patients. First, those who are managed wholly as outpatients; second, those for whom operative treatment is planned but could be discharged to wait at home for their surgery. This section deals with the latter. Patients who are waiting at home for surgery can be managed either as a planned admission as a day case, a planned admission on a specific date for inpatient surgery or waiting on a pending list for the next available operative opportunity. Those awaiting an inpatient date are vulnerable to further delay and cancellation. Those on an ad-hoc wait have the stress of not knowing when they will come into hospital. Consequently, day case surgery in a proper facility should be the route of choice for these patients.

Day cases are planned admissions that do not require overnight stay in hospital. The use of day case surgery for orthopaedic trauma is variable. Identifying procedures and patients suitable to be managed as a day case is the first step. Where day case facilities are separate from those for inpatients, the pressure on admissions can be significantly relieved. However, if the list is shared and it is not a fully-fledged day case unit, there can be perverse pressures. This can result in more minor procedures that are carried out on the fittest patients being done early in the day to allow discharge the same day while sick patients wait, which means that cases are being taken out of the natural order of clinical priority. For a day case system to function well it needs both the facilities to carry out day case surgery and the desire and capacity to identify patients suitable for day case surgery to co-exist.

As demonstrated in **Figure 19**, for distal radial fractures which are often suitable to be managed as a day case there is great variation in how this occurs in practice. The day case rate ranges from less than 1% to almost 100%.

Figure 19. Day case rate for distal radial fractures 2019



Source: Hospital Episodes Statistics (HES) 2019

One clear reason for a low percentage of suitable cases carried out as day surgery is where appropriate facilities are not available. **Table 5** shows the variation found in this regard in the questionnaires.

Table 5. Availability of day case facilities

Metric	England			73 questionnaires
	% Yes	% No	% N/A	
Do you have a day case unit for suitable orthopaedic trauma cases				
Pre-Covid	76.4%	22.2%	1.4%	72 responses (98.6%)
Currently (at time of survey completion)	54.9%	42.3%	2.8%	71 responses (97.3%)

Source: GIRFT Orthopaedic Trauma Services Survey Questionnaire 2022

CASE STUDY

Improving patient outcomes and experience with dedicated hand and wrist lists

The Rotherham NHS Foundation Trust

Patients with fractures of the bones of the hand or wrist can often wait many days for their surgery, either as an inpatient blocking a valuable bed, or at home. If these fractures are not fixed in a timely manner than it can result in a worse outcome for these patients.

The trust therefore wanted to improve patient outcomes and overall patient experience.

Dedicated hand trauma lists with a day surgery pathway were introduced for most patients, including ORIF radius. Later the trust increased its number of specialist hand and wrist orthopaedic consultants from two to three. These consultants each have one dedicated hand / wrist trauma list per week that other consultants can also add patients to.

Surgeons determine if the surgery is suitable to be carried out as a day case. If it is, the trauma coordinators perform a trauma pre-operative assessment. They check if the patient meets the day surgery criteria. If there are any queries, they discuss them with the anaesthetist for the list or day surgery clinical lead.

In addition, day case 'hand trauma' pathways continued during Covid if patients could meet the Covid precaution infection prevention and control requirements of the day surgery unit.

The 'hand trauma' lists work very well in terms of promoting the fact that most wrist and hand surgery is suitable to be carried out as day case surgery, and this helps free up operating time on the main trauma list.

The 2019 BADS Directory of Procedures 2019 showed that in terms of primary reduction and open fixation wrist, and repair hand or wrist tendon, these were performed as day cases in 60%, and 95% of cases respectively.

In many trusts, the trauma coordinator has a key role in maximising the use of operative capacity. It is therefore in their interest to assist in matching patients to the most appropriate operative environment. This means helping to identify those suitable for day surgery. Once the optimum route for a patient is chosen, the trauma coordinators assist the patient along their operative pathway. According to the questionnaire, 84.9% of trusts have trauma coordinators while the remaining 15.1% do not.

CASE STUDY

Trauma coordinators

East Sussex Healthcare NHS Trust

East Sussex Healthcare NHS Trust developed a trauma coordinator role to help refine the trauma pathway and improve communication between specialities. The trust employs two band 7 WTE trauma coordinators.

The key function of the post is as a communication and coordination link for orthopaedic trauma care across the trust. The key responsibility is to ensure a planned and coordinated episode for patients admitted for emergency orthopaedic care, resulting in a better patient experience. Working with the consultant and clinical teams, they will coordinate the clinical management of trauma care from ED admission to discharge, and outpatients awaiting surgery. The coordinator works with junior nurses and junior doctors to improve utilisation of trauma theatre capacity, timely scheduling of surgery, optimising patients and reducing pre-operative starvation. They take an active role in trauma meetings and update patient records. They are also involved in the decision and organisation of admitting patients for surgery to ambulatory lists.

The appointment of the trauma coordinators has enabled the department to set up two weekly telephone clinics for all patients admitted with #NOFs. They organise and conduct the clinic which involves auditing the notes, telephoning post operatively and discussing with the patients their care and perceived outcome. This is then inputted into the NHFD and additional data gathered from these conversations, looking for themes and trends which will in turn impact service delivery and improvement plans. As a result, the trust's NHFD 120 day follow up compliance rose from 2.7% in 2020 to 29.6% in 2021 and they expect to see a further significant improvement in the 2022 report.

Verbal feedback received states that the ambulatory trauma list runs far more efficiently since the trauma coordinators commenced in October 2021. Patient feedback advises that patients feel far better informed, including those that are waiting at home.

Recommendations

<table>
<tr><td>Recommendation 9</td><td>Trusts should ensure that when a surgical procedure is required and it is clinically appropriate for the patient to be carried out as a day case*, it should be done as a day case.</td></tr>
<tr><td>Findings</td><td>The use of day case surgery in orthopaedic trauma is variable. ‘Held at home’ patients with ambulatory trauma have an unpredictable and varied wait for their surgery, and they are often cancelled on multiple occasions. These patients are likely to be good candidates for day case surgery. The use of day surgery could also extend beyond this group as surgical procedures should be done as day cases whenever it is clinically appropriate to do so. Increased use of day case surgery would improve patient experience and inpatient bed usage.</td></tr>
<tr><td>Advice</td><td>Trusts/ICSs should work to ensure that day case surgery is carried out as default for all orthopaedic trauma cases where criteria for suitability is met, within a clearly defined day case pathway.

*The pathways should be developed based on National Day Surgery Delivery Pack which states that day case surgery should take place in a dedicated unit or area within the main hospital site, with admission to a dedicated admissions area.

Trauma coordinators, with support from orthopaedic trauma surgeons and anaesthetists, should select patients for day case surgery using the trust’s day surgery operational policy which should consider the following:

<table>
<tr><th>Social</th><th>Surgical</th><th>Medical</th></tr>
<tr><td>Patient must be accompanied to travel home (children should be accompanied by someone other than the driver).</td><td>Surgeon considers the operation suitable to be done as a day case.</td><td rowspan="2">A judgment of patient fitness for day surgery based on evaluation at the preoperative assessment. Some medical conditions would exclude a patient from day surgery.</td></tr>
<tr><td>Patient must have someone to stay with them for 24 hours post discharge.</td><td>Post-operative pain should be able to be managed with oral analgesia alone.</td></tr>
</table>
</td></tr>
<tr><td>Measurement</td><td>Trusts should aim for all suitable cases to be day cases. As indicators, trusts should benchmark operative wrist and ankle fractures against a:
• 60% zero night stay rate for wrist fractures
• 25% zero night stay rate for ankle fractures</td></tr>
</table>

The need for additional data in ambulatory fracture care

As previously mentioned in relation to the hip fracture pathway, the first steps can influence the effectiveness of the rest of that pathway. For orthopaedic trauma patients who do not require immediate admission, there is variation in how the orthopaedic consultation is provided following the initial presentation to a minor injury unit, ED or general practitioner. This variation may be justified by local circumstances, but there is insufficient data available to be clear on this.There are three models for delivering initial orthopaedic consultation for these patients:

- Face-to-face fracture clinics without prior virtual triage.
- Virtual fracture clinics – when all patients referred to the orthopaedic trauma team are assessed virtually (generally the day after initial presentation) and a decision is made as to the most appropriate next step for that individual patient. For example, patient advice and discharge, review in a face-to-face fracture clinic or review in a specialist clinic.
- Immediate consultation of minor injury units and ED with the orthopaedic trauma team during the first presentation. This practice was initially developed during the pandemic to streamline the patient pathway and has persisted in some trusts.

We cannot count patients attending these clinics, or the number of patients initially presenting to minor injury units and EDs with ambulatory orthopaedic trauma. HES does not distinguish between orthopaedic outpatient attendances for elective or trauma patients and, as covered in several GIRFT reports, diagnostic information outside admitted patient care is often limited or unavailable. For patients presenting to ED and minor injury units, data indicating presenting complaint or diagnosis is not accurate enough to identify the patient as an orthopaedic trauma patient. As such, we can only currently:

- Identify through questionnaires what service models are being used, which does not help us measure productivity.
- Identify patients attending an orthopaedic outpatient appointment after attending ED, which will count some non-trauma activity alongside trauma activity and will not count orthopaedic trauma patients who have been discharged appropriately from ED or the minor injuries unit.

The orthopaedic trauma service is affected by the gap in data, as is the GIRFT programme, as it is not possible to identify the number of patients presenting with ambulatory trauma. Consequently, we cannot measure how effectively the ambulatory trauma pathway runs by identifying, for example:

- the proportion of patients successfully managed and discharged in minor injury units and EDs;
- the proportion of patients discharged based on triage by a virtual fracture clinic;
- the number of outpatient consultations per patient;
- the proportion of patients receiving surgery;
- and in particular, the patient experience.

Most trauma units have tried using virtual fracture clinics to reduce outpatient attendances, modelling their service on examples of best practice, however, some units have often discontinued use of virtual clinics. There would be value in having access to the insights described above as there is currently no consensus on what model works most effectively.

Recommendations

Future Work	**See our future work with respect to orthopaedic trauma information systems on the need to identify how best to deliver the digital capabilities needed for the day-to-day management of orthopaedic trauma patients and ensure that the necessary data is collected to monitor performance.**
Findings	The orthopaedic trauma service is affected by the gap in data, as is the GIRFT programme. It is not possible to identify the number of patients presenting with ambulatory trauma. Consequently, we cannot measure how effectively the ambulatory trauma pathway runs by identifying, for example: • the proportion of patients successfully managed and discharged in minor injury units and EDs; • the proportion of patients discharged based on triage by a virtual fracture clinic; • the number of outpatient consultations per patient; • the proportion of patients receiving surgery; • and in particular, the patient experience. There would be value in having access to the insights described above as there is currently no consensus on what model works most effectively.

Litigation

Reducing the impact of litigation

Each of the GIRFT programme teams has been asked to examine the impact and causes of litigation in their field – with a view to reducing the frequency of litigation and more importantly reducing the incidents that lead to it. It is important that clinical staff have the opportunity to learn from claims in conjunction with learning from complaints, Patient Safety Incidents (PSIs) and inquests. This will lead to improved patient care and reduced costs both in terms of litigation itself and the management of the resulting complications of potential incidents.

Data obtained from NHS Resolution (**Table 6)** show that clinical negligence claim costs in adult orthopaedic trauma (excluding all spinal surgery claims and claims for ages 16 years and under) cost a total of £224.7million over the 5-year period which compares favourable to 2,340 claims against elective orthopaedics costing £276.9million over the same time period. Costs peaked at £54.1million in 2013/14. The estimated total costs include those costs already paid and the outstanding reserve values held against claims still open by NHS Resolution. During this same period there has been a trend of decreasing claims volume from 533 claims in 2013/14 to 371 in 2017/18. This mirrored the fall seen in trauma and orthopaedic surgery when elective orthopaedics is also included. As reported in the February 2020 report Getting It Right in Orthopaedics, in a five year period following the initial elective orthopaedic GIRFT visits, a fall in claim numbers has been observed in trauma and orthopaedic surgery in the context of the national clinical negligence bill increasing with the costs remaining below 2013/14 levels.

In NHS Resolution's 2021/22 Annual Report and Accounts, the positive change in orthopaedics in comparison to other specialties is seen with orthopaedics falling from its historical top ranking in claims volume to third behind obstetrics and emergency medicine with a respective fall in its share of clinical negligence costs across the NHS from 10% to 3% compared to 2013/14. It should be noted that the national figures have been affected by the rise in the high volume and high-cost obstetric claims since the introduction of the Early Notification Scheme in maternity. However, both the GIRFT experience and the data produced by NHS Resolution suggests there has been an improvement in trauma and orthopaedic surgery compared to other specialties.

In addition, some specialist orthopaedic trusts have seen a fall of over 15% in their annual premium (over £650,000) despite the overall cost of clinical claims for all trust rising by 30.5% over the same period. During orthopaedic trauma visits it was clear that many trusts had learned, from previous GIRFT reviews, the lessons round review of litigation. In some trusts, the learning from litigation was not filtering down to the frontline clinicians despite there being good visibility at board and executive level.

Table 6. Volume and cost of medical negligence claims against adult orthopaedic trauma notified to NHS Resolution 20/08 to 2019/20 (children aged 0-16 years were excluded)

Notification Year	No. of Claims	% Change in No. of Claims	Total Cost (£)	% Change in Total Cost of Claims
2013/14	533	-	£54.1m	-
2014/15	511	-4.13%	£40.9m	-24.53%
2015/16	430	-15.85%	£41.7m	+2.04%
2016/17	429	-0.23%	£50.3m	+20.72%
2017/18	371	-13.52%	£37.7m	-25.16%
Total	**2,274**		**£224.7m**	

Source: NHS Resolution

There are of course the wider surgical factors to consider such as the introduction of the WHO Surgical Checklist in 2008 with the reported decreased rate of surgical complications against all surgical specialties and all commentators agree that patient care is as safe as it has ever been despite the increasing activity. Regardless of these improvements NHS Resolution has not seen the same reduction in litigation across all surgical specialties suggesting that something different is occurring in orthopaedics.

We must also acknowledge the wider system factors outside of healthcare including the developments in government policy and the legal profession. The volume of yearly claims peaked in 2013/14 both in orthopaedics and the NHS as a whole and this has been widely attributed to the claimant firms rushing to register claims before the introduction of the Legal Aid, Sentencing and Punishing of Offenders Act (LASPO) which reformed the funding arrangements for 'no win, no fee' arrangements reducing the fees claimant lawyers could charge the NHS and limiting after the event insurance. However, overall claims levels across the NHS have not dropped to 2012/13 levels as they have in orthopaedics.

Limitations

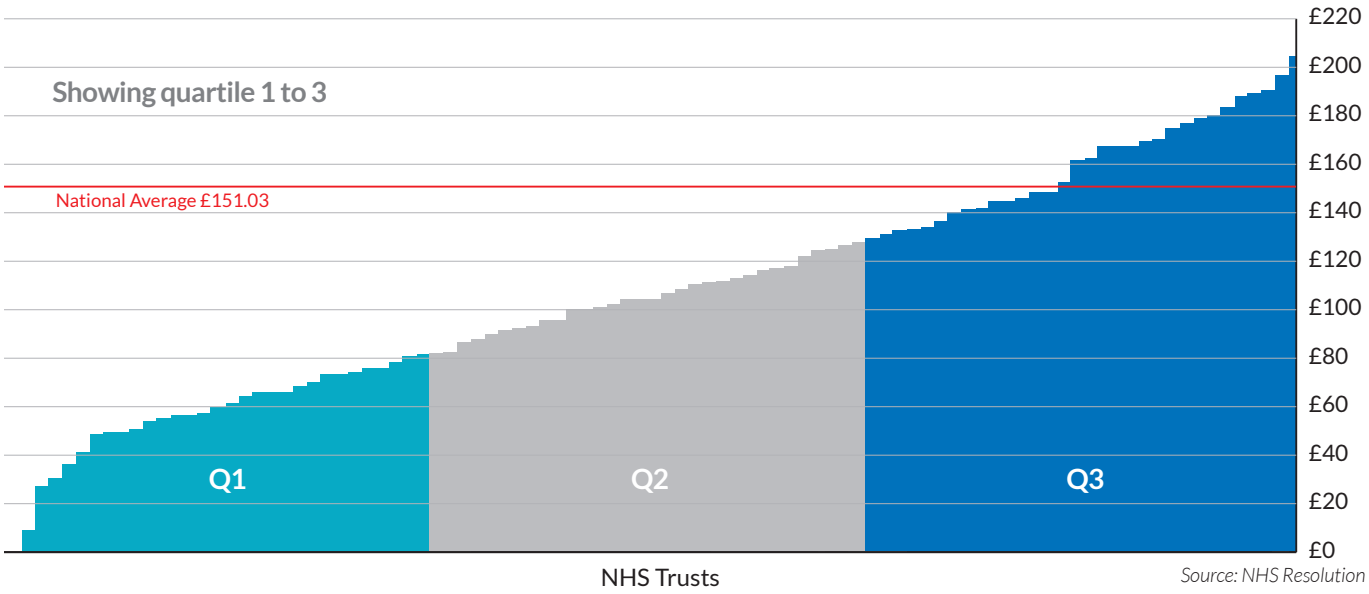
It is important to note although most claims need to be registered within three years of the incident, there is a variable lag phase between the incident and the raising of a claim, and claims can be made after the 3-year period if other conditions are met. In this context a direct correlation between any one factor is clearly not possible but it seems apparent that notifying clinicians of claims to facilitate and ensure learning from the incidents behind them must be a contributory factor in the improvement of patient care and limiting future litigation costs.

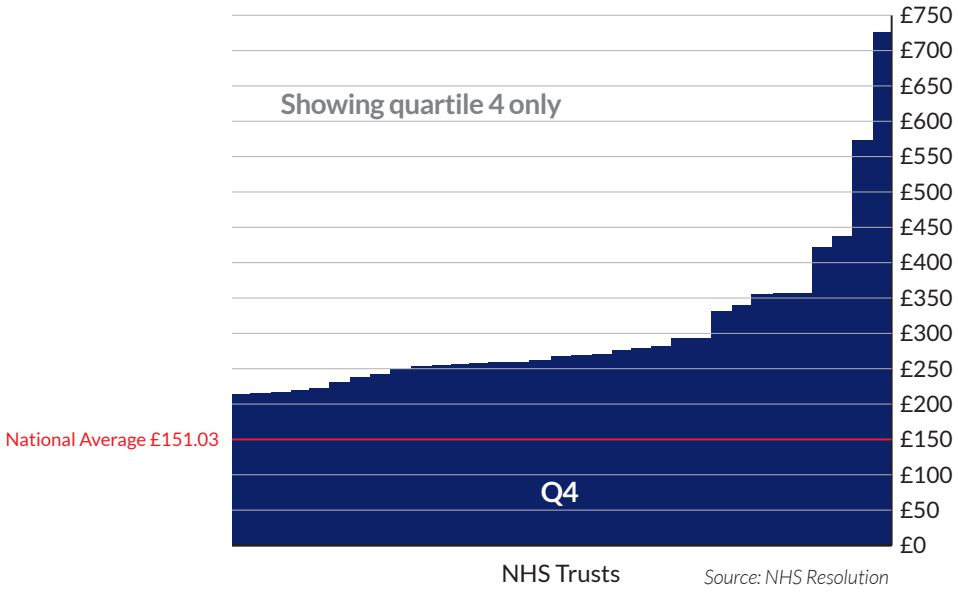
The impact of the coronavirus pandemic is not seen in this claims data as claims from the coronavirus schemes are separate to the Clinical Negligence scheme for Trusts (CNST) and only a small number of claims referencing the pandemic have been received due to the time lag between incidents and claims being brought.

Variation in average litigation costs

The annual GIRFT and NHS Resolution litigation data pack from 2022 found the national average estimated cost of litigation per admission for trauma and orthopaedic surgery for all ages excluding spinal surgery was £151.03. There are noticeable differences between providers: the best performing provider is estimated to cost £0 per admission, while at the other end of the scale, one provider is expected to generate an average of £723 of litigation costs per admission. For these calculations all ages are included and both trauma and elective services as the majority of trusts run a joint trauma and elective service and grouping the data in this way is a more accurate representation of individual unit performance as shown in **Figure 20**.

Figure 20. Variation in England between trusts in estimated litigation cost for trauma and orthopaedic surgery per admission over 5 years (2015/16 to 2019/20).





Notes: Denominator includes day case, elective and emergency admission for trauma & orthopaedics excluding patients admitted for spinal surgery or procedures for back or radicular pain

GIRFT is the first national programme to review clinical negligence claims against the NHS to improve patient care. GIRFT has worked in close collaboration with NHS Resolution to create litigation data packs which has allowed every trust in England to review all their claims from both medical and surgical specialties in one document. The majority of trusts have responded to both data packs to confirm not only utilisation of the packs to learn from claims but also changes to their safety and governance processes so that clinicians are more central to the review of claims and able to share what is learnt. There is clearly an appetite for change now that the data is in an easily readable form.

Claims learning has historically not been prioritised in the same way as learning from incidents. Whilst the work being undertaken by GIRFT and NHS Resolution is principally focused on the former, it is essential to consider both claims and incidents in order to achieve the objective of claims and cost reduction. NHS England is developing a new single national system for reporting patient safety events called learn from patient safety events (LFPSE) to replace the National Reporting and Learning System and as part of NHS Resolution's core system review there will be an opportunity to align both incident and claims learning at the national level. In addition, GIRFT has contributed to the NHS Patient Safety Strategy to promote learning from litigation claims as part of the wider safety agenda.

For a claim to arise, there has been a failure in either the patient care, the perception of it, communication with the patient or handling of a complaint. With this in mind the GIRFT litigation data packs have at their core a 5-point plan to review claims for learning. Each claim (whether successful or not) should be carefully reviewed as a PSI. Importantly, the learning produced by an incident from which a claim arose should be triangulated with any previous investigation into the an episode of care or similar incidents which have been investigated as PSIs, complaints or inquests. It is in this way, that learning from both incidents and claims can provide invaluable insight. The trust should inform NHS Resolution of any coding errors found within the claims and check the benchmarked position of each department against the national average.

Claims trends and causes

Using the NHS resolution data, common causes for litigation in these claims were identified. The same methodology from previous GIRFT national speciality reports has been used to keep the thematic groups as broad as possible to maximise identification of themes. Consequently, the initial broad themes can be broken down into more specific areas and more than one cause can be assigned to each claim depending on the nature of the claim described. The most common themes identified related to 'interpretation of clinical results/clinical picture' (997 claims, 43.84%), 'judgement/timing' (780 claims, 34.3%) and 'unsatisfactory outcome to surgery' (721 claims, 31.71%). These have been the most common claim themes in many of the surgical specialties including the previous GIRFT reviews of orthopaedic claims including both elective and trauma practice as well as paediatric orthopaedics. A complete record of themes is found in **Figure 2** including cancer/tumour and fat-embolism which both had only one claim.

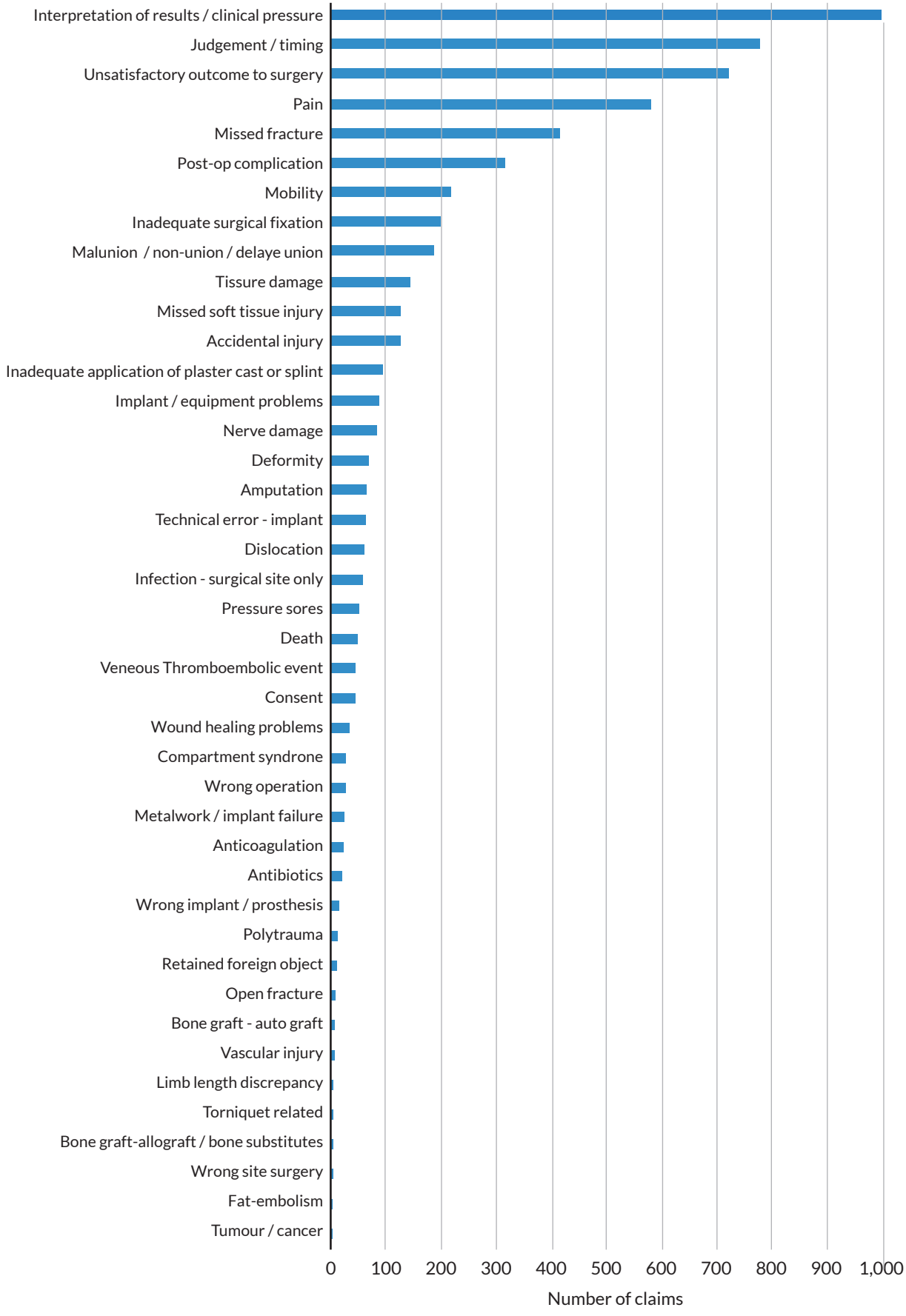
Interpretation of clinical results/clinical picture and judgement or timing

The category of 'Interpretation of results/clinical picture' is a generalised term reflecting claims that relate to diagnosis. When we reviewed these claims further, we are able to identify more specific cohorts of claims relating to 'missed fracture' 412 claims (18.12%), and 'missed soft-tissue injury' 129 claims (5.67%).

The claims associated with an issue in 'judgement or timing' include those where the decision-making around surgery was called into question these can either relate to a clinical decision which delayed or effected treatment in another way or a managerial decision which due to the pressures or priorities of the department resulted in delayed or sub-optimal treatment.

For both of these themes a focus on improving education and training around frequently missed or delayed diagnoses and the timing of treatment is important. This education needs to be targeted at all doctors, especially general practitioners and emergency department staff who are involved in the treatment pathway of these patients. In person or virtual review of cases seen in the emergency department according to BOAST guidance on Fracture Clinic Services is recommended to prevent irretrievable delays to treatment.

Figure 21. Thematic review of claims by number



Note: More than one cause can be assigned to each claim depending on the nature of the claim described.

Source: NHS Resolution

Unsatisfactory outcome from surgery

Variation in surgical skill and technique is one of a number of variables to be reviewed when preventing procedural errors and improving outcomes. The education and training of surgeons in England is robust and overseen by the Joint Committee on Surgical Training. Standards are high but errors still occur. The indicative numbers in orthopaedic trauma procedures which have been included in the new curriculum for trainees in the specialty helps to ensure that a minimum number of procedures have been performed before the completion of training.

Dissatisfaction with surgery also has a relationship with informed consent and previous studies have concluded that the rise in dissatisfaction in orthopaedic surgery could be mitigated by improving consenting practice.[41] Indeed, dissatisfaction can sometimes simply occur as the expected outcomes from a procedure are not shared by the surgeon and the patient. Only 44 (1.93%) of the cases reported here were specifically associated with consent, however the bulk of the claims covered were before the Montgomery ruling in 2015 that has changed the consent landscape. It is now much more likely that a claim for unsatisfactory outcome will come with a consent related element. GIRFT recognises that consent discussions need to adapt to suit the best interests of the patient. Patients with life or limb time-dependent injuries will require a different approach to that of patient seen in a fracture clinic for planned surgery. In the case of the latter GIRFT supports a full informed approach to consent including a discussion of all treatment options, involving no treatment and their prognosis as well as the risks and benefits including those that are specific to the patient and would be regarded as material. It is recognised that where possible a cooling off period following consent discussion and day of surgery is beneficial but will not always be appropriate.

Documentation

The feedback from NHS panel firm lawyers is regrettably they are not always able to defend good clinical practice as robustly as they would want due to the lack of documentation provided by clinicians. It is for this reason that GIRFT and the British Orthopaedic Association (BOA) has produced documentation guidance for common procedures with a high claims volume such as hip and knee arthroplasty. The intention is to ensure that sufficient evidence of good clinical practice is provided in the event that a procedure is ever investigated as a either a patient complaint, PSI or claim. This has been recognised as guidance that will help reduce litigation volume.

In orthopaedic trauma the key area of documentation remains the pre-operative and post-operative assessment of the neurovascular status of a limb. Nerve injury was clearly identified as a theme in 84 claims (3.69%) with an estimated cost of £12.85 million whilst vascular injury was described in only six claims with an estimated cost of £1.23 million. In addition, there were 64 claims (2.81%) which relate to amputations a minimum of three of these claims can be directly linked to failure to adequately examine neurovascular status. Interesting there were only 25 claims (1.1%) relating to compartment syndrome. This is an emergent condition whose diagnosis is also dependent on sequential documented observations of the patient, although pain in response to passive movement remains is more important for early diagnosis ahead of the late signs of neurovascular compromise.

These claims illustrate the importance of sequential observations of injured limbs throughout the care pathway to both diagnose and determine at which point the nerve or vascular injury occurred. We recommend a standardised approach across the teams in different departments involved in the sequential assessment of neurovascular status using proformas detailing the assessment that can be used to ensure a reliable and reproducible assessment is recorded either in physical notes or electronic patient record.

Many claims relate to a breakdown in communication either between clinical staff and the patient or between healthcare professionals. GIRFT supports the NICE NG37 (Factures: assessment and management) recommendations that communication should be provided in plain English which is understandable by patients, family members, carers and that is readily available both in the patient record and sent to the patient's GP within 24 hours of admission.

Avoidable complications from common interventions

There are key steps in common interventions to prevent avoidable complications. Injuries relating to the application of plaster casts or splints were reported in 92 claims (4.05%). Training to avoid pressure points or damage to skin and soft tissue should be shared between staff who work in the different departments that provide these interventions along the care pathway. Only four claims (0.18%) were related to complications of torniquet use, these relate to burns from skin

[41] *Machin JT, Hardman J, Harrison W, Briggs TWR, Hutton M. Can spinal surgery in England be saved from litigation: a review of 978 clinical negligence claims against the NHS. 2018;(0123456789)*

preparation fluids where the torniquet has not been adequately isolated and nerve injury from too higher pressure in an upper limb torniquet. GIRFT commends the use of the BOA's BOAST guidance for the safe use of intra-operative torniquet to avoid these problems.

Twenty-seven claims (1.19%) were related to 'Never events' (wrong site surgery n=3, wrong implant/prosthesis n=14 and retained foreign object post procedure n=10) which is concerning[42]. These events represent a system failure and patient safety issues. They can be eradicated by more diligent organisation and closer adherence to tools including the World Health Organisation checklist.

Recommendations for reducing the impact of litigation

Recommendation 10	**Trusts should reduce litigation costs using the GIRFT programme's five-point plan and by addressing common causes of litigation in orthopaedic trauma with respect to limb injuries, common interventions, such as plastering and splint application, and use of intraoperative tourniquets.**
GIRFT five-point Plan	a. Clinicians and trust management to assess their benchmarked position compared to the national average when reviewing the estimated litigation cost per activity. Trusts would have received this information in the GIRFT 'Litigation data pack.'
	b. Clinicians and trust management to discuss with the legal department or claims handler the claims submitted to NHS Resolution included in the data set to confirm correct coding to that department. Inform NHS Resolution of any claims which are not coded correctly to the appropriate specialty via CNST.Helpline@resolution.nhs.uk
	c. Once claims have been verified clinicians and trust management to further review claims in detail including expert witness statements, panel firm reports and counsel advice as well as medical records to determine where patient care or documentation could be improved. If the legal department or claims handler needs additional assistance with this, each trusts panel firm should be able to provide support.
	d. Claims should be triangulated with learning themes from complaints, inquests and serious untoward incidents (SUI)/serious incidents (SI)/ patient safety incidents (PSI) and where a claim has not already been reviewed as SUI/SI/PSI we would recommend that this is carried out to ensure no opportunity for learning is missed. The findings from this learning should be shared with all front-line clinical staff in a structured format at departmental/directorate meetings (including Multidisciplinary Team meetings, Morbidity and Mortality meetings where appropriate). The staff groups involved in these meeting will need to grow beyond trauma and orthopaedics to include: orthogeriatrics, anaesthetics and peri-operative medicine, nursing and allied health profession (AHP) staff, emergency medicine and radiology.
	e. Where trusts are outside the top quartile of trusts for litigation costs per activity GIRFT will be asking national clinical leads and regional improvement teams to follow up and support trusts in the steps taken to learn from claims. They will also be able to share with trusts examples of good practice where it would be of benefit.
Common causes of litigation in orthopaedic trauma	a. Trusts should ensure that clinical staff use standard neurovascular observation record charts for limb injuries whether in patients notes or part of the electronic patient record. These should include a clear description of the examination performed to ensure consistency in approach through the patient pathway.
	b. Trusts should ensure that they avoid incidents from common interventions, such as plaster or splint application, by implementing shared learning of those performing these interventions across different departments to ensure a consistently high performance of intervention regardless of point in care pathway.
	c. Trusts should ensure that BOAST guidance on 'the safe use of intraoperative torniquets' is followed.

[42] *NHS Improvement. Never Events list 2018. https://webarchive.nationalarchives.gov.uk/ukgwa/20200501112015mp_/https://improvement.nhs.uk/documents/2899/Never_Events_list_2018_FINAL_v7.pdf*

Notional financial opportunities

Broadly, orthopaedic trauma patients fall into three groups:

1. Those with an injury that can be managed completely and discharged at the first point of contact.
2. An intermediate group, whose continuing care can be provided in clinic as a day case or short planned admission.
3. Those that require immediate admission.

The default should be to manage the patient in the first applicable group. To allow this, appropriate resources, equipment, and skilled personnel need to be in place to ensure each pathway is efficient and effective.

Reviewing patient pathways and identifying unwarranted variation can demonstrate a financial opportunity. These should be actioned, not least to release funds for investment in alternative ways of working called for in this report to improve orthopaedic trauma care.

The care of people with fractures makes up a major part of the workload in orthopaedic trauma. The organisation of pathways and services for the treatment of patients with fractures is therefore important. Some fractures are sufficiently common to allow valid comparison in the care provided on different sites and to demonstrate variation. It was clear in deep dives conducted that the constructive involvement of senior management and routine collaboration of clinical colleagues, from all relevant specialties in the quality improvement (not just delivery) of pathways of a patient's care, was beneficial.

The table below includes examples of areas where there is potential to make changes to pathways that could contribute to an overall cost saving, most notably by a reduction in hospital bed days, but also by a more appropriate choice of implants. It looks at potential notional financial opportunities as a result of implementing the REDUCE study package of measures (recommendation 8 in this report), together with standardising the approach to treatment of fractures (recommendation 7 in this report). Hip and wrist fractures have been used as illustrative examples in the table, as the most robustly recorded and coded elements. It is therefore likely that the cost opportunity is greater than stated, particularly in relation to length of stay, as other patients with fragility fractures affecting mobility (NAFF's or non-ambulatory fragility fractures) have many similarities to those with hip fractures.

As discussed earlier in the report, expanding fracture liaison services across England could also save £150.1 million annually by 2029/2030* and mitigate the potential pressure on acute services that could be caused by increasing hip fracture incidence.

There are other areas within the specialty where variation and opportunity are highlighted within this report but have not been included in financial opportunity calculations due to insufficient data. These include (not an exhaustive list):

- Optimising the use of 'one stop care', increasing proportion of patients successfully managed and discharged in minor injury units and EDs.
- Optimising the use of day case surgery for 'held at home' patients with ambulatory trauma.

In addition to the specific areas outlined in the table, the report has identified a total spend of £224.7million on litigation over a five-year period. Implementation of the GIRFT programme's five point plan should improve patient safety and reduce litigation costs for orthopaedic trauma patients.

Table 7. Notional Financial Opportunities

Improvement	Standard			Target		
	Target	Notional activity opportunity *	Gross notional financial opportunity**	Target	Notional activity opportunity*	Gross notional financial opportunity**
1. Modify and monitor the pathway of care for the older or frail orthopaedic trauma patient with respect to the organisational factors highlighted in the REDUCE study*** *(Recommendation 8)* Note: potential savings are greater than identified here, as the REDUCE package of measures can be used to manage all similar non ambulatory fragility fractures. Hip fracture is used as a representative example.						
1a. Implementation of REDUCE measure 13 - Dedicated hip fracture ward to which patients can be admitted direct from ED Opportunity = Reduce emergency hip fracture hospital bed days *Data: REDUCE record linkage cohort study Jan - Dec 2021*	REDUCE measure 13	66,300 non elective bed days	£20.9m	REDUCE measure 13	66,300 non elective bed days	£20.9m
1b. Implementation of all other REDUCE measures Opportunity = Reduce emergency hip fracture hospital bed days *Data: REDUCE record linkage cohort study Jan - Dec 2021*	Other REDUCE package of measures	186,200 non elective bed days	£58.69m	Other REDUCE package of measures	186,200 non elective bed days	£58.69m
2. Standardisation of treatment approach, implementing recommended best practice *(Recommendation 7)* Note: potential savings are greater than illustrated here as there are other areas where adoption of a standard approach will result in financial savings. Wrist and hip fixation are used as representative examples.						
2a. Opportunity = wrist fixation using wire rather than plate *Data: HES 2019/20* *Cost estimated based on difference between plate and wire fixation****	50% reduction in wrist fixations using plate - convert to wire fixation	3,500 plate fixations converted to wire	£2.54m	75% reduction in wrist fixations using plate - convert to wire fixation	5,200 plate fixations converted to wire	£3.78m
2b. Opportunity = hip fracture fixation using extramedullary implants rather than intramedullary nail *Data: National hip fracture database 2021* *Cost estimated based on difference between extramedullary and intramedullary fixation*****	60% reduction in hip fracture fixations using intramedullary nails - convert to extramedullary implants	2,800 IM fixations converted to EM	£1.14m	80% reduction in hip fracture fixations using intramedullary nails - convert to extramedullary implants	3,800 IM fixations converted to EM	£1.54m
Total			**£83.27m**			**£84.92m**

Notes to table:

* Activity opportunities are annual figures, based on one year of activity data. Unless specified, activity that could be avoided is shown

** Costing of financial opportunity: unless otherwise stated, cost estimates are based on published national reference costs https://www.england.nhs.uk/national-cost-collection/, uplifted to 22/23 using tariff inflation.

*** REDUCE shows organisational factors and best practices can have a particularly significant impact in terms of minimising patients' length of stay and/or reducing mortality.

**** Costa, M., Achten, J., Plant, C., Parsons, N., Rangan, A., Tubeuf, S., Yu, G. and Lamb, S., 2015. UK DRAFFT: a randomised controlled trial of percutaneous fixation with Kirschner wires versus volar locking-plate fixation in the treatment of adult patients with a dorsally displaced fracture of the distal radius. Health Technology Assessment, [online] 19(17), pp.1-124. Available from: https://www.journalslibrary.nihr.ac.uk/hta/hta19170/#/abstract

***** Bone and Joint OPEN, (2022) [Variation of implant use in A1 and A2 trochanteric hip fractures] https://online.boneandjoint.org.uk/doi/full/10.1302/2633-1462.310.BJO-2022-0104.R1 and National Clinical Guideline Centre, (2011) [The Management of Hip Fracture in Adults]. Available from: www.ncgc.ac.uk

About the GIRFT programme

Getting It Right First Time (GIRFT) is a national programme designed to improve treatment and care by reviewing health services. It undertakes clinically-led reviews of specialties, combining wide-ranging data analysis with the input and professional knowledge of senior clinicians to examine how things are currently being done and how they could be improved.

Working to the principle that a patient should expect to receive equally timely and effective investigations, treatment, and outcomes wherever care is delivered, irrespective of who delivers that care, GIRFT aims to identify approaches from across the NHS that improve outcomes and patient experience, without the need for radical change or additional investment. While the gains for each patient or procedure may appear marginal, they can, when multiplied across an entire trust – and even more so across the NHS as a whole – deliver substantial cumulative benefits.

The programme was first conceived and developed by Professor Tim Briggs to review elective orthopaedic surgery to address a range of observed and undesirable variations in orthopaedics. In the 12 months after the pilot programme, it delivered an estimated £30m-£50m savings in orthopaedic care – predominantly through changes that reduced average length of stay and improved procurement.

The same model has been applied in more than 40 different areas of clinical practice. It consists of four key strands:

- a broad data gathering and analysis exercise, performed by health data analysts, which generates a detailed picture of current national practice, outcomes and other related factors;
- a series of discussions between clinical specialists and individual hospital trusts, which are based on the data – providing an unprecedented opportunity to examine individual trust behaviour and performance in the relevant area of practice, in the context of the national picture. This then enables the trust to understand where it is performing well and what it could do better – drawing on the input of senior clinicians;
- a national report, that draws on both the data analysis and the discussions with the hospital trusts to identify opportunities for improvement across the relevant services;
- an implementation phase where the GIRFT team supports providers to deliver the improvements recommended.

GIRFT and other improvement initiatives

GIRFT is part of an aligned set of workstreams within NHS England. It is the delivery vehicle for one of several recommendations made by Lord Carter in his February 2016 review of operational efficiency in acute trusts across England.

The programme has the backing of the Royal Colleges and professional associations and has a significant and growing presence on the Model Hospital portal, with its data-rich approach providing the evidence for hospitals to benchmark against expected standards of service and efficiency. The programme also works with a number of wider NHS programmes and initiatives which are seeking to improve standards while delivering savings and efficiencies.

Implementation

GIRFT has developed an implementation programme designed to help trusts and their local partners to address the issues raised in trust data packs and the national specialty reports to improve quality. The GIRFT team provides support at a local level through the NHS England regional teams, advising on how to reflect the national recommendations into local practice and supporting efforts to deliver any trust specific recommendations emerging from the GIRFT visits. GIRFT also helps to disseminate best practice across the country, matching up trusts who might benefit from collaborating in selected areas of clinical practice. Through all its efforts, local or national, the GIRFT programme strives to embody the 'shoulder to shoulder' ethos that has become GIRFT's hallmark, supporting clinicians nationwide to deliver continuous quality improvement for the benefit of their patients.

Glossary

Advanced Nurse Practitioner (ANP)
A registered nurse that has completed additional training and academic qualifications to be able to assess, diagnose, treat and prescribe, and make referrals for patients.

Allied Health Profession (AHP)
A group of clinicians that deliver care to individuals across a diverse range or care pathways in different settings. This may include occupational therapy, dietetics, orthoptics, paramedics, physiotherapy, podiatry, speech and language therapy and radiography.

All-Party Parliamentary Group (APPG)
Informal cross-party groups composed of Members of Parliament (MPs) and Members of the House of Lords with a shared common interest who meet to discuss a specific policy, region or country

British Association of Plastic, Reconstructive and Aesthetic Surgeons (BAPRAS)
BAPRAS is a membership-based organisation for plastic, reconstructive and aesthetic surgeons in the UK. The organisation is focused on advancing education in this specialty across the UK, improving understanding and promoting best practice.

Best practice tariff (BPT)
Best practice tariffs were introduced in 2010 by the Department of Health to reward hospitals that provide the key elements of a hip fracture programme designed to deliver best practice care to each patient.

British Orthopaedic Association (BOA)
The BOA is a membership organisation and the Surgical Specialty Association for Trauma and Orthopaedics (T&O) in the UK.

British Orthopaedic Association Standards for Trauma and Orthopaedics (BOAST)
BOAST is a compilation of standards to support the delivery of care and management of people with orthopaedic injuries. The development of these standards is overseen by the British Orthopaedic Association (BOA).

Care of the Elderly (CoE)
A dedicated support for older individuals that wish to continue living at home.

Care Quality Commission (CQC)
The CQC is the independent regulator of health and social care in England. The CQC ensures that health and social care services provide people with safe, effective, high-quality, compassionate care and encourage care services to improve.

Class III Medical Device
Class 111 Medical Devices are implanted devices that are designed to support or sustain life but present potential risk of injury or illness.

Computerised tomography (CT)
Computerised tomography is a computerised x-ray imaging procedure used to visualise various parts of the body, including the bones.

Distal Radius Acute Fracture Fixation Trial (DRAFFT)
A randomised controlled trial of surgical fixation and manipulation using K-wires in comparison to locking plates.

Electronic Patient Record (EPR)
An electronic record that contains information on an individual's health and care.

Euro-Qol-5D (EQ-5D)
An instrument used to measure quality of life. It consists of questions for each of the five dimensions relating to quality of life including morbidity, self-care, pain/discomfort, usual activities and anxiety/depression.

Firm
A team of doctors working together to provide patient care

Fracture Liaison Service (FLS)
Fracture liaison services provide secondary prevention for fragility fractures (defined as a fracture following a fall from standing height or less). These services systematically and proactively identify patients in secondary and/or primary care who have suffered a fragility fracture and assess the patient's risk of future fragility fracture in a timely fashion. FLS then provide advice and/or therapy to reduce that risk.

Fracture Risk Assessment Tool (FRAX)
A risk assessment instrument that estimates an individual's risk of having a hip or another major fracture in the next 10 years.

General Medical Council (GMC)
A public body that manages the official register of medical practitioners in the UK while overseeing education and training.

Hospital Episode Statistics (HES)
A database containing information on hospital admissions, emergency department attendances, and outpatient appointments in the NHS.

Integrated Care Systems (ICS)
Advanced local partnerships involving primary and secondary care, local councils, and others, taking shared responsibility to improve the health and care system for their local population.

International Classification of Disease (ICD)
A global diagnostic tool maintained by the World Health Organisation (WHO) and used to categorise and monitor causes of injury and death.

Ionising Radiation (Medical Exposure) Regulations (IR(ME)R)
A set of regulations developed to ensure that radiation is used safely to protect patients and clinicians from the risk of harm when exposed to ionising radiation,.

Key Performance Indicator (KPI)
A quantifiable measure of performance of an organisation/team against specific objectives over time.

Length of Stay (LoS)
The length of an inpatient episode of care, calculated from the day of admission to the day of discharge, and based on the number of nights spent in hospital.

Major Trauma Centres (MTC)
A specialist unit that provides specialised trauma care and rehabilitation to patients across the UK.

Morbidity & Mortality (M&M) Meetings
An M&M meeting is a forum where clinicians come together to discuss adverse outcomes from patient care delivery. These meetings support clinicians in improving patient outcomes, patient safety and the overall quality of care.

Multidisciplinary meeting (MDM)
A meeting between a team of healthcare professionals from different disciplines.

Multidisciplinary team (MDT)
A team of healthcare professionals from different disciplines.

National Confidential Enquiry into Patient Outcome (NCEPOD)
An organisation dedicated to improving standards of healthcare through confidential surveys and reviews of care delivery.

National Hip Fracture Database (NHFD)
A database holding information collated as part of a clinically led audit of hip fracture care and secondary prevention in the UK. Performance is measured against guidance and clinical standards for hip fracture and reports are produced annually.

National Institute for Health and Care Excellence (NICE)
Provides evidence-based guidance, advice, quality standards, performance metrics and information services for health, public health, and social care.

Neck of Femur (NoF)
A fracture to the top part of the femur (leg bone) just below the ball and socket joint.

Non-ambulatory fragility fracture (NAFF)
A fracture that results from a force that would not usually result in a fracture. An example of this is a fall from standing height or less that leaves a patient injured.

Open reduction and internal fixation (ORIF)
A type of surgery that is used to stabilise and heal a fractured bone.

PACS
A photo archiving and communications system used by radiologists in hospitals.

Quality Committee
A committee tasked by the board with assuring all aspects of quality and safety of clinical care, including regulatory standards. This remit is often augmented with additional areas such as risk, workforce, service user or patient engagement, research and development, information performance and communication.

REDUCE
A study that aimed to determine which hospital-level organisational factors can be used to predict adverse patient outcomes in the months following a hip fracture. The study examined patients aged over 60 years living in England and Wales who had sustained a hip fracture between 2016-2019.

Royal Osteoporosis Society (ROS)
A UK-based national charity for bone health and osteoporosis.

Surgical site infections (SSI)
An infection that occurs following surgery in the part of the body where the surgery was performed.

Trauma and Orthopaedics (T&O)
A department that looks after patients with conditions and injuries that affect joints, bones, muscles, ligaments, tendons and nerves.

Trauma Audit & Research Network (TARN)
A national clinical audit for trauma care in the UK. Data is submitted from all hospitals to drive improvements in the delivery of trauma care by measuring performance and outcomes against national standards and guidelines.

Acknowledgements

Data and copyright acknowledgements

The GIRFT programme would like to thank the following organisations for making data available:

- NHS Benchmarking Network
- NHS Digital
- CQC
- NHS England and NHS Improvement

We are grateful to NHS Resolution for the litigation data provided, and to John Machin (GIRFT Litigation Clinical Lead) and his team for authorship of the litigation section.

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We acknowledge the work of other programmes, groups and individuals which has helped us in creating the questionnaire and deciding which metrics to explore. Most importantly we acknowledge that this report would have been impossible without the efforts of the numerous clinicians and other NHS staff who treat the patients and input their data.

We are grateful to NHS Digital for providing and agreeing that HES/NHFD data can be used for the calculation of metrics in this report. This report also contains public sector information licensed under the Open Government Licence v3.0.

GIRFT report team

We wish to acknowledge the essential contribution to the production of this report from our colleagues at GIRFT and NHSBN, especially:

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Appendices

Appendix 1: Sample job description for perioperative nurse practitioner role

The following documents have been kindly provided by the South Tees Hospitals NHS Foundation Trust (see case study on p73 of this report).

JOB DESCRIPTION >

PERSON SPECIFICATION >

The above links require registration to FutureNHS. Please click and you will be directed to the FutureNHS sign-in page.

Appendix 2: Fractured Neck of Femur Integrated Care Pathway Guidelines

A&E

- Confirm fractured neck of femur
- Inform NOF nurse (Mon-Fri 7:30-15:30)
- Inform Ortho SHO out of above hours
- Take bloods: FBC/U&E/Clotting/Group & Save
- ECG/Chestd x-ray if patient >75 years
- Pain Management: FICB/IV paracetamol
- Request bed on ward

Pre Operative

- Orthopaedic registrar review
- Medical registrar review
- Anaesthetic review
- VTE prophylaxis
- Optimise for theatre
- Manage pain
- Pressure relieving mattress
- Avoid catheterisation
- Urine dip
- Mark limb to be operated on
- Consent form

Theatre

- Confirm patient is on theatre list
- NBM 6 hours pre-operatively
- Optimal fluid management
- Spinal anaesthetic/GA & Block
- Operation should be within 36 hours of admission
- Delay/cancellation to ve clearly documented
- Operate in daytime hours
- Sign recovery transfer sheet before returning to ward

Post Operative

- Inform SHO on return to ward
- Check HB post op day 1, transfude if necessary
- Mobilise day 1
- Pain management
- Monitor fluid balance
- Avoid constipation/remove catheter early
- Falls workup and bone protection

Rehab

- Identify discharge goals
- Interlinking therapy services - OT/PT
- Structed rehabilitation
- Adequate analgesia
- Timely social work involvement
- Weekly multidisciplinary team meeting

Discharge

- NOF nurse follow up calls
- Therapy followup
- Fracture clinic

Source: Watford General Hospital

Appendix 3: Standards and Guidance Register

GIRFT has created a document to support trusts in keeping track of guidelines relevant to orthopaedic trauma patients. Trusts will be able to record whether a guideline has been reviewed, implemented, rejected with reason or whether implementation planning is in progress. This can then be assessed at subsequent GIRFT visits.

The document is in the form of an Excel spreadsheet which can be accessed using the link below. It includes a traffic light system that updates with each live entry.

DOCUMENT ON FUTURENHS >

The above link require registration to FutureNHS. Please click and you will be directed to the FutureNHS sign-in page.

For more information about GIRFT,
visit our website: www.GettingItRightFirstTime.co.uk
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The full report and executive summary are also available to download as
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