

Trauma and Orthopaedics ACCESS Review:

Addressing Core Capacity Everywhere in Scotland Sustainably

March 2016

NHS Scotland

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Table of Contents

Trauma and Orthopaedic ACCESS : Why you should read this report	3
Foreword	4
1. Overview and Recommendations - Developing Trauma & Orthopaedic Services for NHSScotland.....	6
2. Context of the ACCESS Programme.....	11
3. Aims of the ACCESS Programme.....	12
4. Engagement and Achieving the Aims	12
5. The Four Quality Drive Pathway Workstrands	14
6. Optimising Use of Theatre Capacity	26
7. Optimising Use of Beds.....	28
8. Optimising Use of Workforce	30
9. Optimising Spend.....	32
10. Patient Experience.....	34
11. Addressing the Demand and Capacity Imbalance	35
12. Conclusions.....	36
13. Recommendations.....	40
Appendix A – Trauma and Orthopaedic Dashboard.....	41

Trauma and Orthopaedic ACCESS : Why you should read this report

This report recognises the considerable progress made in improving the quality of care and efficiency of Trauma and Orthopaedic services across Scotland over the last ten years. It sets out the national and local actions we all need to take to further improve the outcomes for people with painful musculoskeletal conditions and occurrences of orthopaedic trauma.

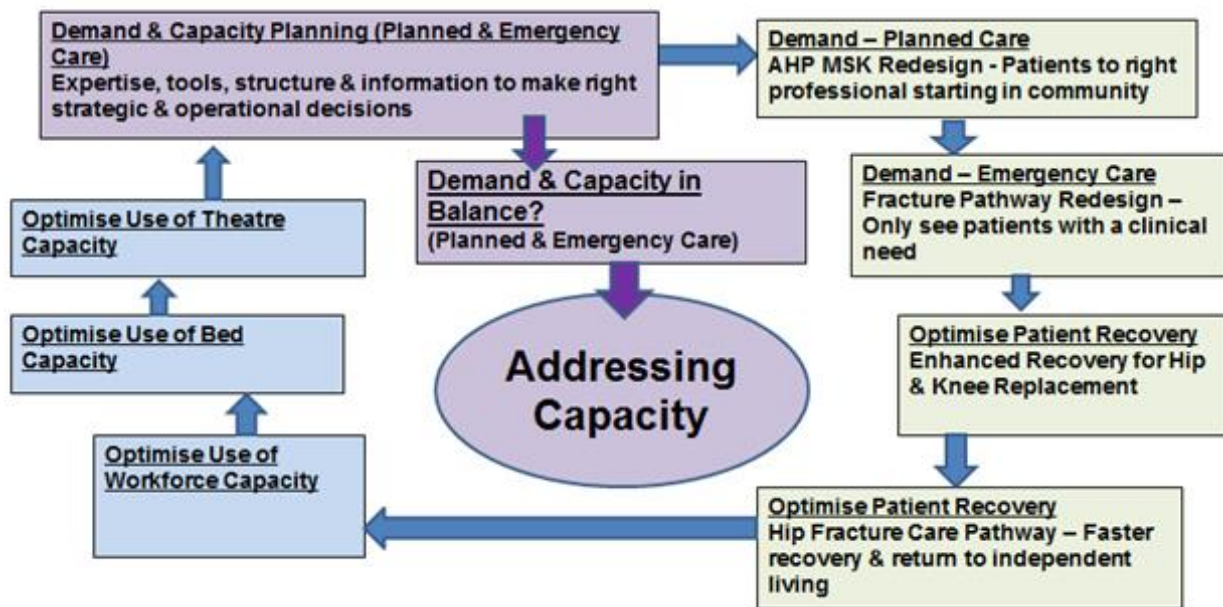
This report makes recommendations which will deliver the aims of the ACCESS Programme for Trauma and Orthopaedic services across NHSScotland (depicted in the diagram below). It focuses on: sustainably embedding quality patient pathways of care; optimising the use of existing capacity (theatres, beds and workforce); whether we have sufficient capacity; and planning for addressing remaining gaps to deliver safe and timely care for patients now and in the future as demographics change – having the right services in the right place, with the patient at the centre.

The report explains the national engagement and support process of a Peer Review visit to each Board, subsequent Feedback Reports and enhancement of each Board’s Action Plan. This is underpinned by the measures in the Trauma and Orthopaedic Dashboard to enable benchmarking of each hospital and monitoring of ongoing improvement and sustainability by local improvement teams and on a national basis.

Each Board must carefully consider how the recommendations fit with their local circumstances and the priorities for their own Action Plan.

Key successes, conclusions and recommendations are highlighted in the Overview and Recommendations Section of this report on pages 6 to 10.

Trauma & Orthopaedic ACCESS **Addressing Core Capacity Everywhere in Scotland Sustainably**



Foreword

John Connaghan - Chief Operating Officer, NHSScotland and Sponsor of the Trauma and Orthopaedic ACCESS Programme

and

Colin Howie – Past President of the British Orthopaedic Association, Consultant Orthopaedic Surgeon NHS Lothian and Clinical Lead for the Trauma and Orthopaedic ACCESS Programme

Trauma and Orthopaedics is a high volume, high risk specialty both in terms of waiting times and service delivery, crossing both planned (scheduled) and emergency (unscheduled) care and is a 'tracer' specialty for most mixed specialty hospitals. The efficient and effective management of emergency trauma (mainly fractures) is key to supporting local hospitals, minimising disability and returning patients to their pre-injury state as soon as possible. Hip and knee replacements are life changing, are amongst the most successful treatments the NHS in Scotland has to offer, are two of the most common major surgical procedures and are amongst the top 'return to work' procedures.

The National Clinical Strategy for Scotland 2016 highlights that just under half of all community disability is caused by musculoskeletal conditions, much of it chronic and potentially reversible, particularly in the least well off communities. An expected 59% increase in the over 65s in Scotland in the next 14 years (to 1.4 million by 2030) will place increasing demand on Trauma and Orthopaedic services as, for example, the number of osteoporotic ankle, wrist and hip fractures increases and 'baby boomers' expect to remain physically active, refusing to accept the limitations of arthritic joints. This inevitable increase in demand has been recognised, with £200 million having been announced to develop a comprehensive Elective Care Strategy in Scotland out to 2035. Radical changes in the way the service is provided, again as outlined in the *National Clinical Strategy*, will be necessary.

The Trauma and Orthopaedic community have been at the forefront of service redesign over the last ten years, working very successfully with the Scottish Government to improve the outcomes of treatment and reduce delays to care for patients. There is evidence of marked reductions in complications, improvements in care and a considerable reduction in expenditure per case (unusual in today's healthcare system). For example, the demonstrable success of the Enhanced Recovery Programme for hip and knee replacement patients or the positive impact of audits of arthroscopy of the knee in substantially reducing the rates in patients over 60, both examples of 'Choosing Wisely'. Substantial redesign of end-to-end patient journeys from the community into secondary care have been made, thanks to the support of many in the community and the enthusiastic development of extended roles for allied healthcare professionals and nurses.

In Scotland, there is a confidence that we are very good at many things... just not everywhere and not all of the time. The ACCESS programme (Addressing Core Capacity Everywhere in Scotland Sustainably) has been developed to address this variation. The recent Peer Review visits to each Board and supporting data used in this programme form the basis of local Action Plans and have begun a national discussion about service delivery at every level. The solutions may be different in each area; however, we know that we can still make improvements in bed, theatre and workforce utilisation in every Board in Scotland.

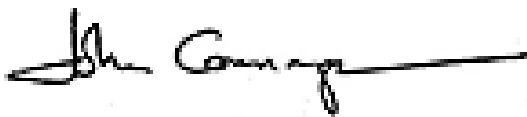
To achieve quality improvements and efficiencies in delivery, many services and pathways will require to be redesigned, including for example, regional and national networking where appropriate to support clinical expertise but more importantly result in better outcomes for patients.

An information base has been generated which was fed back locally to create a knowledge-base of strengths and weaknesses within each service. Local open forum discussion developed a different plan for change for each Trauma and Orthopaedic service. The challenge for us all will be implementation of these plans and lasting sustainable change with measurable benefits for our patients.

“The NHS will survive as long as there are people who care for it.”

Aneurin Bevan – Minister of Health 1945 to 1951

We would like to thank all the Orthopaedic surgeons, extended scope practitioners, anaesthetists, other clinicians, nurses and managers around the country who are part of the improvement team for their service, the MSk audit team and analysts at ISD who produced the data and built the Trauma and Orthopaedic Dashboard, the Getting It Right First Time team [GIRFT], particularly Professor Tim Briggs, the British Orthopaedic Association and the Trauma and Orthopaedic ACCESS team at the Scottish Government led by Kate James. This is an exemplar project of huge benefit to Trauma and Orthopaedic services and their future planning but also as a spring-board for other specialties to learn from, with the patient remaining firmly at the centre.



1. Overview and Recommendations - Developing Trauma & Orthopaedic Services for NHSScotland

- NHS Scotland has a significant challenge in Trauma and Orthopaedics to: remove the current backlog of patients waiting for an outpatient appointment and conversion through to surgery; prepare for demographic changes increasing demand for emergency and planned services and make sure that demand for and provision of one does not destabilise the other.
- Dr Catherine Calderwood, Chief Medical Officer Scotland, says in her Annual Report 2016 *Realistic Medicine*, 'In these challenging times I want to hear...how to innovate, ask questions about variation in practice and outcomes, reduce waste and act differently to improve care'.
- At each hospital there are examples of best practice in clinical care and efficient use of resources. This best practice is being spread, with a steady reduction in variation, using an evidence based approach to promote achievable change in the system. The following areas, discussed at the Peer Review meetings held at each Board across Scotland, can contribute significantly to improvements in patient care and the capacity challenge. Boards will require strong working relationships to successfully work through these issues, with managers and clinicians working 'shoulder-to-shoulder' to optimise outputs for a common goal: the patient.
- It is essential that we are providing effective and efficient services within existing facilities prior to the development of the new Treatment Centres. This will also enable repatriation of activity currently undertaken in the Independent Sector, with financial and clinical benefits.
- Each Trauma and Orthopaedic team produced an Action Plan prior to their Peer Review visit. These are now being enhanced to include the recommendations made in their individual Review Feedback Report. The national Trauma and Orthopaedic ACCESS team are supporting rapid change, particularly in the spread of best-practice in the following areas from one Board to another. Progress is being monitored using the Trauma and Orthopaedic Dashboard.

The Four Quality Drive Pathway Workstrands:

- **Allied Health Professional Redesign** - Getting patients on the right pathway starting in the community. NHS Lanarkshire achieved a 75% reduction in back-pain referrals to Orthopaedics and a significant reduction in MRIs. The 'front-end' model using NHS24, web platforms for early advice and self-management and end-to-end pathways from the community through to secondary care are now being implemented across all Boards in Scotland. A further focus on the enabling factors to ensuring that patients are seen by the most appropriate professional first time will have significant benefits for patients and also a reduction in outpatient demand for Orthopaedics. See Section 5a.
- **Fracture Pathway Redesign** - Patients only attend clinic if there is clinical need. At Glasgow Royal Infirmary, only one-third of non-operative fracture patients presenting at the Emergency Department [ED] are now physically seen in a fracture clinic (approximately one-third of patients are safely discharged by ED and one-third have their X-ray reviewed by an Orthopaedic surgeon and are then discharged with a phone call). The efficacy, safety and cost effectiveness, along with patient satisfaction can be evidenced. Most hospitals have implemented a similar redesign that is appropriate for their local circumstances.

Further focus is required to ensure that all patients who can safely be discharged from ED are discharged, that all patients who need to be reviewed by an Orthopaedic surgeon are reviewed virtually and discharged by telephone if safe to do so and that those that do require to be seen are seen by the most appropriate professional. See Section 5b.

- **Enhanced Recovery** - Optimising patient recovery after hip and knee replacement. Already, 14,000 fewer post-operative bed days per annum are used than in 2010 for hip and knee replacement patients as their recovery is now on average one day faster. There is scope for further reduction in post-operative length of stay and in reducing the 36% of patients still admitted the day before surgery. There are many exemplar sites for Enhanced Recovery in Scotland; however as length of stay shortens, the provision of dedicated consistent services becomes more critical. See Section 5c.
- **Hip Fracture Care Pathway** - Optimising care of frail older people. What matters most to patients and their relatives is that they get back to living where they were before their fracture as quickly as possible and that they maintain their level of independent living. The percentage of patients admitted from home/sheltered accommodation who have returned back there at 30 days post-admission has increased from 44% in 2012/13 to 52% in 2015. The variation between hospitals from 30% of patients back home at 30 days to over 80% demonstrates significant further scope for improvements in care for these patients. In addition, delay to surgery at some hospitals, caused by a lack of theatre time, increases the incidence of medical complications (and if prolonged, mortality), increases the pressure on beds and causes discomfort and slower recovery for our patients. See Section 5d.

Recommendation 1:

Embed the patient care and efficiency benefits of the four pathway workstrands at all hospitals, using the measures in the Trauma and Orthopaedic Dashboard to reach the achievable standards of the top quartile hospitals.

Optimising Use of Theatre Capacity:

- **Theatre Capacity** - A focus on reducing theatre cancellations, late starts, turnover time between cases and increasing the number of cases per list will support best use of this valuable resource. Approximately 40% of hip and knee replacements are undertaken at hospitals that achieve 'four joint' sessions as the norm, with the remaining 60% undertaken at hospitals that achieve the equivalent of three joints or fewer. Achieving four represents a 33% increase in capacity and would result in shorter waiting lists at reduced cost. In this report 'Four Joints' is used as a proxy for theatre productivity and throughput; many lists do not involve all arthroplasty cases or one type of surgery. It is also recognised that some lists should be scheduled as training lists with fewer joints and list composition needs to take account of bed availability. See Section 6.
- **Emergency Theatre Capacity** - Increased throughput of emergency cases (mostly fractures) at a number of hospitals where it is comparatively extremely low will result in considerable reductions in pre-operative stay for trauma patients. This will lead to increased bed availability and a better experience for our patients, with a faster return to their normal life. See Section 6.

Recommendation 2:

Identify and remove the multi-factorial barriers to achieving improved productivity for planned and emergency surgery at all hospitals.

- **Day Case Units** - A review of the potential for increasing Orthopaedic day case activity at outlying hospitals in Boards should be considered as a means of bringing care closer to home. This could support the viability of the smaller units and free-up capacity at the main hospitals. See Section 6.

Recommendation 3:

Review the cost/benefit analysis of enhancing Day Case provision at some outlying hospitals.

Optimising Use of Beds:

- **Bed-Days Requirement** – Bed use can be reduced by: increasing the scope of procedures and the percentage undertaken as day case; reducing planned, emergency and rehab pre- and post-operative Length of Stay [LOS]; a reduction in readmissions following planned and emergency surgery discharge; and, admissions via the ED department that could be treated without admission. See Section 7.

Recommendation 4:

Focus on improving pathways and processes that can impact positively on bed-days required within acute and rehab settings.

- **Creating and Ensuring Protected Beds/Wards** - Several Boards in Scotland already have protected beds (e.g. NHS Fife). The clinical and financial benefits of reduced infection, shorter length of stay and better patient flow with fewer cancellations are well-documented. For example, there is an estimated cost of approximately £100,000 in additional patient care for every infected joint case (inpatient and then in community). Protected beds allow more efficient and effective healthcare delivery (such as exist for stroke, cardiac and renal services). Full consideration of smoothing patient flow throughout the week to maximise the use of the beds and for whole-systems balance and overall benefit is essential. See Section 7.

Recommendation 5:

Evaluate the case for protected beds and develop strict protocols to maintain the efficient flow of Orthopaedic surgical cases through them for the benefit of patients and the service.

Optimising Use of Workforce:

- **Developing Roles** – The AHP and Fracture Pathway Redesign workstrands and a reduction of physical review appointments following hip and knee replacement all enable reinvestment of consultants' and other clinicians' time saved. There are also many best-practice examples of the optimised use of certain skill sets. For example, the national shortage of Geriatricians led NHS Dumfries and Galloway to base a GP on their ward for frail elderly fracture patients to manage the complex medical co-morbidity and social elements of patient recovery and discharge. See Section 8.

Recommendation 6:

Review options for extended roles and competency based workforce deployment to achieve patient care and efficiency benefits.

- **Complex Surgery Profile** - Half of all surgeons in Scotland who undertake hip revisions and 63% who undertake knee revisions, undertake less than 5 per annum. Given the complexity of revisions, fewer surgeons should be conducting more revisions each. This is also true of other complex procedures such as elbow, shoulder and ankle replacements. See Section 8 (and 12 for Regional Network options).

Recommendation 7:

Agree a plan for which surgeons should conduct which types of complex procedure to increase the volume these surgeons undertake to gain safety, quality of care and professional expertise benefits.

Optimising Spend:

- **Implant Costs** - The cost of the implant for hip and knee replacements is a significant part of the overall cost of the case. Implant costs have been reduced significantly in recent years but still vary significantly across Scotland and could be reduced further. See Section 9.
- **Clinical Value** – Procedures undertaken on some cohorts of patients who do not benefit or do not have a positive outcome could be reduced and alternatives such as conservative treatment used instead. See Section 9.
- **Litigation** - This is also a spend that can be reduced. Though of relatively small volume and value in most cases, litigation data is not routinely shared with the Orthopaedic teams. The details of cases provide a vital opportunity to learn and improve practice. Often the key issue relates to delivery profiles rather than specific competencies. See Section 9.

Recommendation 8:

Reduce spend on implants, procedures and litigation by evaluating clinical evidence, effectiveness and patient outcomes.

Regional Services:

- **Local Pathways to Regional Services** – A number of sub-specialty services have grown, not necessarily according to either perceived un-met need or actual demand presenting. Having, for example, foot and ankle surgeons at many hospitals undertaking complex ankle replacements can create demand and spreads the workforce thinly. The expertise of Orthopaedic surgeons in Scotland could be better utilised with networks and regional services for the more complex, less common procedures concentrated at fewer hospitals. Informal networks exist between some hospitals but these should be formalised and extended to all hospitals. An infection network should also be set-up as bone infection is difficult and expensive to treat, requiring an extended professional team.

Recommendation 9:

Evaluate the benefits of formalised networks and regional services for low volume complex surgery and bone infection to gain safety, quality of care, professional expertise and efficiency benefits.

National Planning:

- **Demand and Capacity Planning** - The majority of the recommendations made so far have the potential to influence the demand and capacity balance as well as the quality of patient care. It is therefore essential that each Board has a detailed understanding of this (at sub-specialty level), along with modelling of the likely future impact of demographic changes, to identify gaps in capacity that need to be planned for. Most hospitals have enough of at least two of the three areas of resource (theatres, workforce and beds). The use of the resource needs to be balanced where one element is out of alignment with the others.
- There needs to be sufficient efficiently used capacity for trauma patients at each Board such that the normal variation in emergency demand does not impact on planned surgery. National planning of Major Trauma Centres and Orthopaedic Trauma Units at a local level is being undertaken to ensure that the optimal plan for major trauma in Scotland is implemented and other trauma (the vast majority of episodes) is delivered locally to a high standard. Capacity for planned surgery at all designated locations needs to be safe-guarded from variation in demand from all emergency admissions (Orthopaedic and other admissions), with efficiency, patient care and waiting times benefits.
- The services undertaken at the new Diagnostic and Treatment Centres will need to be carefully planned to ensure they address the biggest capacity gaps now and in the future as demand increases. They need to be set up to work efficiently and effectively, augmenting existing acute provision across the whole system.

Recommendation 10:

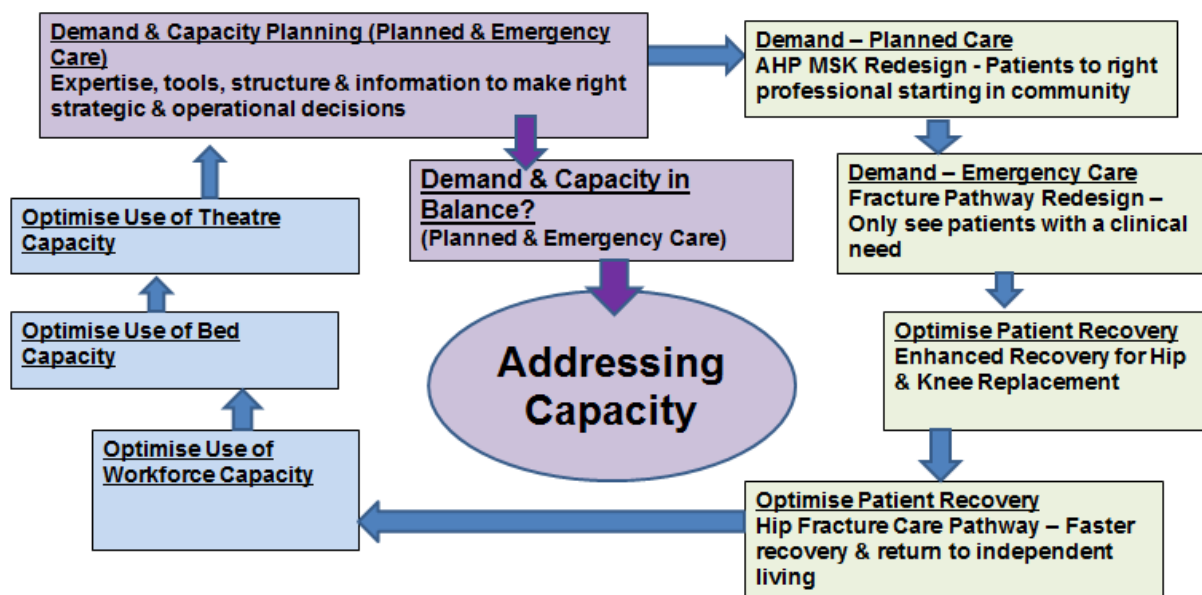
Engage with the 'Getting Ahead' programme for local and national planning of demand, capacity and flows and modelling of future changes and capacity gaps to be confident that NHSScotland has enough well utilised capacity in the right places to continue to provide a safe, efficient and patient-centred emergency and planned Trauma and Orthopaedic service.

2. Context of the ACCESS Programme

- The national ACCESS programme (Addressing Core Capacity Everywhere in Scotland Sustainably) builds on the success of the MSK and Orthopaedic Quality Drive, which has generated a significant momentum for change. This ACCESS stage places heavy emphasis on optimising use of existing capacity and more particularly on a clearer understanding of which elements of our Trauma and Orthopaedic services are in balance and which are out of balance (see circle diagram below).
- This significant programme of work is sponsored by John Connaghan, Chief Operating Officer NHSScotland, was commissioned by the Scottish Orthopaedic Services Development Group (SOSDG) and is being implemented by the Access Support Team at the Scottish Government. The MSK and Orthopaedic Quality Drive has already supported the embedding of good clinical practice across Scotland. This is evidenced by the strength of multidisciplinary clinical and managerial teams' involvement at the majority of hospitals and demonstrable gains from the four pathway workstrands. This includes, Enhanced Recovery pathways for major joint replacement patients, the quality Hip Fracture Care Pathway, transferring roles to Allied Health Professionals for the assessment and treatment of musculoskeletal pain such as knee, back and foot problems and redesign of non-operative pathways from Emergency Departments (mostly, but not all, for fractures) to reduce unnecessary admissions and outpatient appointments.
- The broader ACCESS Programme is designed to support Boards to understand and manage incoming demand effectively for each patient's condition, to optimise use of existing capacity (workforce, beds and theatres) and to identify and address capacity imbalance, locally, regionally and where necessary, nationally.

Trauma & Orthopaedic ACCESS

Addressing Core Capacity Everywhere in Scotland Sustainably



3. Aims of the ACCESS Programme

The national ACCESS programme to Address Core Capacity Everywhere in Scotland Sustainably has the following four aims:

- To embed patient care and efficiency benefits in the four priority areas of the ‘Quality Drive’ (green boxes on the circle diagram):
 - Getting patients on the right pathway starting in the community - AHP MSK Redesign;
 - Patients only attend clinic if there is clinical need - Fracture Pathway Redesign;
 - Optimising patient recovery after joint replacement - Enhanced Recovery;
 - Optimising care of frail older people - Hip Fracture Care Pathway.
- To make sure optimal use is made of existing Trauma and Orthopaedic capacity - Workforce, Beds and Theatres (blue boxes on the circle diagram).
- To support effective demand and capacity planning at each Board to address any capacity gaps to deliver safe and timely care for patients now and in the future as demographics change. Capacity imbalance may be addressed through further benefits realisation, service reconfiguration, regional solutions or mid- to longer-term national investment (purple boxes on the circle diagram).
- To share success and create greater resilience in local Trauma and Orthopaedic services in each Board.

4. Engagement and Achieving the Aims

- **GIRFT¹** - At the request of the Orthopaedic community (via the Scottish Committee for Orthopaedics and Trauma), Professor Tim Briggs and his team were commissioned to replicate and expand upon the successful ‘Getting It Right First Time’ (GIRFT) methodology. The GIRFT national pilot in England was: led by clinical professionals who lead the provision of local Orthopaedic services; funded by the NHS; and, endorsed by the Department of Health and the Medical Directorate of the NHS Commissioning Board. It identified areas of unwanted variation in clinical practice and/or divergence from the best evidence, with the potential to improve standards of care, timely pathways and patient experience and outcomes, with significant cost savings. The work culminated in a report and a set of English national recommendations aimed at improving quality of care and also reducing expenditure on complications, litigation, procurement and unproven treatment.

This led to the development of bespoke peer to peer advice about options for the configuration of services in selected elective orthopaedic pathways considered to be most in need of improvement at local and national level (as appropriate to commissioning decisions and recommendations to providers for change). A proposed “Dashboard” has been developed and refined for use in England to cover Orthopaedic services. Following the successful completion, the Department of Health commissioned a programme that covers an additional ten clinical specialties over the next three years to support the NHS in delivering productivity and efficiency improvements across England. Lord Carter is leading this agenda and the programme is being led by The National Director of Clinical Quality & Efficiency (Professor Tim Briggs).

Our partnership with the GIRFT team allowed the sharing of successful methodology, national comparators and best practice examples.

¹ <http://www.gettingitrightfirsttime.com/>

- **Peer Review Visits in Scotland** - A visit was undertaken at each Board with a Trauma and Orthopaedic service (12 territorial Boards and NHS Golden Jubilee National Hospital) between October 2015 and January 2016. The sessions were led by Consultant Orthopaedic Surgeons Colin Howie, past President of the British Orthopaedic Association (BOA) and from NHS Lothian and Tim Briggs, past President of the BOA and from NHS England. They were accompanied by a clinical and managerial peer from other hospitals around Scotland. In advance of their visit, each Board was encouraged to provide an update of their ACCESS programme progress so far and a copy of their on-going Action Plan for embedding further change.
- **Benchmarking** - The Peer Review visits were informed by the new Trauma and Orthopaedic Dashboard (see Appendix A) and a quality report containing the GIRFT indicators. The Trauma and Orthopaedic Dashboard contains a wide range of clinical quality, pathway process, patient outcome and capacity utilisation indicators. The indicators incorporate those used in GIRFT but also a comprehensive set of indicators to cover each of the aims of the ACCESS programme (as represented in the circle diagram in the previous section). The Dashboard enables users to access regularly updated data for their own hospital/Board and gauge their quartile position compared to others. They can also view data for other hospitals/Boards to identify examples of best-practice or to see indicators for a Board treating cohorts of their patients (e.g. GJNH or other Boards for geographic reasons or complexity of cases).
- **Peer Review Meetings** - The Peer Reviews were well attended by clinicians and managers, with the Chief Executive, Medical Director, AHP Director, Quality Drive Executive Lead, other senior managers, Orthopaedic Clinical Director and the multi-disciplinary improvement team at each hospital all invited to take part. Attendees were encouraged to review the data for their hospital(s) with colleagues so that they could prepare for discussion on areas requiring action. The sessions were constructive, with multi-disciplinary colleagues together discussing, challenging and using evidence to address issues. Messages were heard at a senior level.
- **Action Plans** - Following their visit, each Board was sent a Feedback Report with recommendations. The team were encouraged to enhance their Action Plan to take account of the recommendations and focus attention on priority areas of clinical quality and capacity utilisation for greatest gain. This adds an additional layer of actions that build on the change already in progress. The Peer Review process enables Boards and hospitals to benchmark themselves against their peers, using variation methodology and to identify places with best-practice. The national Trauma and Orthopaedics ACCESS team's support for each Board to progress their Action Plan is a major part of the programme.
- **Achievable Benefits Still to be Realised** - At all sites in Scotland there is evidence of good practice and overall there are many areas where Scottish services excel. Adaption, adoption and consolidation of these proven approaches form the basis of each Action Plan and its subsequent delivery. The Dashboard is being used locally and nationally to monitor the positive effects of changes implemented, thus 'closing the loop on action'. The Peer Review process has generated a significant momentum for change and improvement focus.

5. The Four Quality Drive Pathway Workstrands

The first of the four aims of the ACCESS programme is to embed patient care and efficiency benefits in the four priority areas of the 'Quality Drive':

- Getting patients on the right pathway starting in the community - AHP MSK Redesign
- Patients only attend clinic if there is clinical need - Fracture Pathway Redesign
- Optimising patient recovery after joint replacement - Enhanced Recovery
- Optimising care of frail older people - Hip Fracture Care Pathway

The following sections describe progress so far and the achievable benefits still to be realised.

a) Allied Health Professional Musculoskeletal Redesign

Patient Focus

'If I have muscle or joint pain that is interfering with my life or my work I want to be able to access reliable information about how I can help myself. If I need any assessment or intervention, I want this to happen in a timely manner and be by the most appropriate person'.

- This redesign is all about getting patients with musculoskeletal (MSK) pain on the right pathway starting in the community. A key component of the national transformation model is self-referral access to AHP MSK services as early intervention has been shown to reduce the burden of chronic pain. NHS24 is providing a front-end Musculoskeletal Assessment and Triage Service for the majority of Boards that appropriately directs low risk patients to self-management. In addition, web information for patients and primary care clinicians including, for example, videos of condition-specific exercises have been developed, along with more sophisticated tools such as fully tested web-algorithms pointing patients to appropriate care².
- Centralised AHP referral hubs for physiotherapy, podiatry and orthotics have been implemented at most Boards. Patients with MSK problems get early appropriate advice and, if necessary, assessment by an efficient AHP service to get them started on the most appropriate pathway for their treatment first time. Work undertaken on efficient and sustainable use of AHP resource has significantly reduce community AHP waits in the majority of Board areas towards an aim of a maximum 4 week wait.

Achievable Benefits still to be realised:

- Audits of Orthopaedic referrals at some Boards identified that up to a quarter of the patients could have been managed appropriately by community services. For example, redesign achieved a 75% reduction in back-pain referrals to Orthopaedics at NHS Lanarkshire and a significant reduction in MRIs. Now that AHP waits have been significantly reduced, it is a very good time to redesign end-to end pathways from community AHPs through to referral into secondary care, only for patients where a consultant opinion is required.

² www.nhsinform.co.uk/msk , <https://itunes.apple.com/gb/app/nhs-24-msk-help/id556064114?mt=8>
https://play.google.com/store/apps/details?id=uk.co.isai.nhs24msk&hl=en_GB

- Where the referral rate into Orthopaedics is above the national average, and particularly where it is rising, Boards are encouraged to strengthen their end-to-end pathways for all 'body regions' e.g. low back pain and foot and ankle problems (with Podiatry, Orthotics and Physio). Success should be monitored by a reduction in referrals for patients into secondary care for surgeon review when they could have been seen and treated by AHPs or other primary care clinicians.
- These pathways should have agreed protocols and require strong communication between surgeons and AHPs. Surgeons need to support the pathways to make sure urgent patients are referred to them without delay but that other patients for whom trying conservative treatment first is appropriate are not referred. In addition, pathways from the Emergency Department and the involvement of AHPs to reduce inappropriate referrals to Orthopaedics should be reviewed. Visits to other Health Boards should be considered to see how their pathways operate.
- Education and support of primary care decision makers is very important. The redesigned pathways, with optimal conservative management, how to access information and web tools available, referral protocols and expected content and quality of referrals should all be communicated to GPs. Several Boards have investigated differing GP referral patterns and have met with GPs to provide additional information and guidance on the Orthopaedic services offered (e.g. Clyde Sector in NHS GG&C). The impact of this approach should be reviewed and shared. Good quality referrals to Orthopaedics can make a big difference to patient expectation, use of surgeons' time and pre-appointment optimisation, as well as GP practice efficiency and effectiveness.
- The overall vetting process within Orthopaedics should also be reviewed to make full use of Extended Scope Practitioners as well as consultants. Referrals for patients who do not need to be seen in secondary care should be sent back with information (e.g. if appropriate conservative treatment has not been tried first) and a further cohort should be directed to ESPs working alongside sub-specialty consultants.
- The practice of 'named referrals' makes full redesign difficult and should be discouraged (except where a patient has been previously treated by a particular consultant or if the case requires a specialist in a complex procedure). Continuity of care is an important part of good medical practice and rates highly in patient satisfaction.
- There is a national issue with coding of referrals from AHPs to secondary care. Boards should resolve the systems issue that results in no referrals from community AHPs to Orthopaedics being recorded as such in the submission to the nationally held SMR database. Without this recording, the AHP contribution to pathways may not be fully recognised.
- National 'pump-prime' funding has been provided to support a number of Boards to implement new models (e.g. joint Foot and Ankle pathways with Orthopaedics, Podiatry, Orthotics and Physiotherapy). Learning from these models of care will be shared nationally. A business case is also being prepared to extend the integration of Surgical Podiatrists into Foot and Ankle pathways to undertake standard routine forefoot surgery reducing the demand on Orthopaedic surgeons.



b) Non-operative Fracture Pathway Redesign

Patient Focus

'If I break something, I want to be cared for in the Emergency Department, given advice about the healing process and only come back to see somebody in Orthopaedics if I need to.'

- To ensure that patients only attend a Fracture Clinic if there is clinical need, most hospitals have implemented a locally appropriate version of the redesign implemented at Glasgow Royal Infirmary in 2011. At GRI, only one-third of non-operative fracture patients presenting at the Emergency Department [ED] are now physically seen in fracture clinics (approximately one-third of patients are safely discharged by ED and one-third have their X-rays reviewed by an Orthopaedic surgeon and are discharged with a phone call). Full implementation of this pathway has been evidenced to be patient-centred, safe and cost effective³.
- One of the key indicators is a reduction in the percentage of patients with 'Potentially Dischargeable Injuries' [PDIs] being referred from the Emergency Department to Orthopaedics. Traditionally these patients would have been seen in Fracture Clinics, but evidence from around Scotland shows that they can be safely discharged straight from the ED. A strong working relationship with ED is crucial to ensure this part of the pathway works effectively. The percentage of PDIs referred from ED to Orthopaedics has been reduced from 20% in 2012 to 10% in 2015 (a small percentage will always be clinically appropriate). An average of 30% of those patients who are referred to Orthopaedics are now being discharged by telephone following a virtual review (varying depending on the population served by each hospital, such as paediatrics). All figures quoted in this section come from the 'MSK Audit' undertaken regularly in each hospital and analysed by ISD. The most up-to-date figures are accessible from the Trauma and Orthopaedic Dashboard.

Achievable Benefits still to be realised:

- It is recommended that regular audit is undertaken at each hospital to ensure that patients who can safely be discharged from ED are discharged, that patients who need to be reviewed by an Orthopaedic surgeon are reviewed virtually and discharged by telephone if safe to do so and that those that do require to be seen, are seen by the most appropriate professional (e.g. nurse or sub-specialist surgeon).
- A review of whether a cohort of the patients referred from ED and subsequently discharged by Orthopaedics following a virtual review could have been safely discharged directly by ED, with advice and a contact number to raise any concerns, will reduce unnecessary double-handling. To facilitate this, a close working relationship between Orthopaedics and ED staff is essential to enhance confidence in pathways. In addition, a reduction in return appointments should be evaluated, along with the sharing of work at a number of hospitals to standardise care (e.g. ORIF, Tibial Nail and Scaphoid fractures).

³ Fracture clinic redesign reduces cost of outpatient care - Jenkins; Morton; Anderson; Van Der Meer & Rymaszewski
Bone and Joint Research, Vol. 5, 05.02.2016, p. 33-36. <http://www.bjr.boneandjoint.org.uk/content/5/2/33>

c) Enhanced Recovery for Hip and Knee Replacement Patients

Patient Focus

'If I need a joint replacement I want to be a partner in my care so that I can recover as quickly as possible.'

- This pathway, to optimise patient recovery after hip and knee replacement, has been working extremely well for patients in Scotland for some years. The table, based on key elements of the pathway, demonstrates impressive, clinically-led change between 2010 and 2015. Nevertheless there remains scope for further significant benefit. All figures quoted in this section come from the 'MSK Audit' undertaken regularly in each hospital and analysed by ISD. The most up-to-date figures are accessible from the Trauma and Orthopaedic Dashboard. The indicators used were selected by patients and clinicians as being important measures of quality of care.

Arthroplasty Patients (Source: MSK Audit, ISD)	2010	2015
Same day admission	29%	64%
Urinary catheterisation	35%	14%
IV fluids stopped on day of surgery	22%	82%
Use of PCAs	49%	12%
Restarting diet <12 hrs post-op	60%	97%
Mobilisation of patients by end day 1 post-op	84%	98%
Patients discharged by 3 days post-op	21%	48%
Patients discharged by 5 days post-op	62%	77%

Achievable Benefits still to be realised:

- As well as patient recovery being enhanced, the reduction in post-operative length of stay [LOS] saves 14,000 bed nights per annum compared with 2010. If the bottom quartile of hospitals reduced their post-op LOS to the same as the top quartile, this could save a further 1,000.
- Day of Surgery Admission [DOSA] has risen from 29% to 64% of patients having a hip or knee replacement since 2010. This equates to a saving of nearly 5,000 bed nights p.a. If the remaining 36% of patients were brought in on the day of surgery, this could free-up a further 5,000 beds nights per annum. Although it is more challenging in rural Boards, or for the GJNH where patients travel considerable distances, NHS Highland admits 90% of patients on the day of surgery and should be commended for this achievement. DOSA requires a strong Pre-operative Assessment process, including full Anaesthetic Department input, and is aided by the security of having protected Orthopaedic beds (see later section).
- Patient education and setting of expectations has been enhanced by hospitals who run 'Joint Schools' or who have patient DVDs. NHS Grampian are developing a video for their 'No Delays' patient website and a national template for a patient information booklet is available.

- Early mobilisation of patients has been shown to aid recovery. Currently, however, 19% of patients have not been mobilised by midday on day 1 post-op. Physiotherapy resources are often extremely stretched. Some hospitals have had success with creating a seven day service and achieving early mobilisation of routine patients, by training up care workers as Physiotherapy Assistants. This model allows them to mobilise routine patients and the limited physiotherapy and occupational therapy cover to be prioritised with overall benefits of earlier patient discharge. Also, as their training is very specifically on mobilisation, this prevents the resource being diverted elsewhere in the hospital.
- Catheterisation rates have decreased from 35% to 14% of patients since 2010 and across Scotland patients are now catheterised on clinical need rather than as routine. Catheterisation has been shown to impede mobilisation, add to length of stay and has resulted in a number of litigation cases for Orthopaedics. Hospitals with a rate above the national average are encouraged to review practice, along with anaesthetic colleagues.
- Post-operative LOS varies considerably. Nationally, 23% of patients stay beyond day 5. The variation is from only 12% in the top quartile of hospitals to 35% in the bottom quartile of hospitals. Fife Health Board have developed a predictive post-operative nausea and vomiting (PONV) risk assessment. This process is deemed easy to use and has proved to be very successful in reducing length of stay for patients.
- Total Average Length of Stay (for patients aged 65+) for primary hip replacements varies across Scotland from 4.3 to 7.7 days (national average, 5.2 days). The range is smaller for primary knee replacements from 4.4 days to 7.1 days (national average, 5.2 days). N.B. Total LOS is influenced by Day of Surgery Admission Rates. It is recognised that for more rural Boards travel distance for some patients introduces an issue with discharging patients late in the day or if they might need readmitting if there are wound-healing problems and therefore may add to length of stay.
- There is potential for Arthroplasty Nurses to undertake more of the six week and one year reviews of patients, thus freeing up consultant time. In addition, review appointments beyond one year can be reduced by sending patients PROMS questionnaires (patient reported outcomes). The response from a small volume of patients with less good outcomes triggers the need for an X-Ray which can be conducted locally and then reviewed by a consultant to decide if an appointment is required.
- Comprehensive, standardised embedding of all the elements of an Enhanced Recovery pathway has patient-centred and efficiency benefits. A number of hospitals are doing particularly well with this approach (Ayr, Crosshouse, Borders, Fife, Forth Valley, RAH, GJNH and Stracathro, with a recognition that maintaining a standardised approach and good patient flow is easier at 'Planned Surgery' only sites such as GJNH and Stracathro).
- A recent Monitor Report⁴ (co-badged with the BOA) describes a two stream approach, with high quality and standardised care for both streams. Many patients can reach their discharge criteria at 2-3 days, with a second cohort of older frailer patients, whose complex needs require a package of care which should be in place before admission, who can be discharged at 5 days.

⁴www.gov.uk/government/uploads/system/uploads/attachment_data/file/466895/Elective_care_main_document_final.pdf

Hip and Knee Revision and Complication Rates

All revision and complication data comes from the Scottish Arthroplasty Project [SAP] dataset and is accessible from the Trauma and Orthopaedic Dashboard.

Revision Rates – The revision of a hip or knee arthroplasty is complex, expensive and has a huge impact on the patient. The 5 year revision rates for hip and knee replacements show variation across Scotland. The underlying reasons for this were fully discussed with the individual hospital teams at the relevant Peer Review meetings. It is believed that the variation in revision rates is decreasing and will be monitored as the data in the Trauma and Orthopaedic Dashboard is updated.

Arthroplasty Infection Rates (SAP) and Surgical Site Infections (SSIs) - The hip and knee replacement infection rates also show variation across Scotland (average 1.2%). The reasons for this were discussed at the relevant Peer Review meetings. Though the infection rates overall are comparable with international standards, if all units achieved the same rates as the top quartile of units there would be significant benefits for our patients and cost savings for the service (see Protected Beds section). Rates for the categories measured by the SSI Audit vary across hospitals. Hospitals are encouraged to include all cases in regular team review meetings to promote learning.

Mortality Rates - The mortality rates for hip and knee replacements are low and are generally similar across Scotland. Any cases are routinely discussed as part of the local Clinical Governance process.

DVT/PE Rates – Hip and knee DVT/PE rates vary between hospitals. Some of the hospitals with higher rates have not managed to achieve consistency in prophylaxis and are encouraged to do so.

Readmission Rates - Many hospitals have implemented enhanced service models to reduce readmission rates. For example, at Fife, patients presenting at ED with hot swollen joints are asked to come back to a 'day-bed review bay' created in one of the wards and included in the morning ward round. The Orthopaedic surgeon then makes the decision on what is required and whether to admit the patient. Other hospitals have a clear point of contact with an Arthroplasty Nurse who offers telephone advice as to whether the patient should go to their GP, come to the hospital as an outpatient or be admitted. Hospitals with higher rates of readmission are encouraged to review the effectiveness of their models.

Implant Fixation Methods and Policy

- Research shows that cemented implants have a lower failure rate than un-cemented implants for patients aged over 65. Furthermore, the use of un-cemented implants in this group adds unnecessary cost. There is variation in the fixation methods for hip replacement across hospitals in Scotland, although this variation is not nearly as marked as in England.
- A number of Boards with more than one hospital have hospital or surgeon-specific fixation methods, rather than a Board approach. One Board faced a similar variation in approach; they now have a 99% cemented rate in the over 65s and a unified approach. The issue was resolved by all Orthopaedic surgeons acting as a team and taking an evidence-led and peer review approach at joint replacement meetings. This approach was viewed as proactive in driving improvements, as well as aligning consultants' views.

- Use of ODEP (Orthopaedic Data Evaluation Panel) 10A rated hip implants is a good indicator of whether organisations are using well evidenced and best value products. There is considerable variation in the use of 10A hip replacements. This ranges from 34% to 100% at individual hospitals, with the national average in Scotland of 59%. This is significantly higher than England and represents good practice. It is recognised that many hospitals are using excellent 7A rated devices and that some manufacturers have not, until recently, engaged with the ODEP process. The British Orthopaedic Association has recently produced professional guidance on this topic⁵.

Knee Arthroplasty within a Year of Arthroscopy

- The percentage of primary knee replacement patients (aged 60+) who had an arthroscopy less than one year previously ranges from less than 1% to 5%. In some hospitals, the rate is believed to be high due to 'staging arthroplasty' (*i.e.* arthroscopy is undertaken to see if it removes or confirms the need for an arthroplasty). This practice and patient outcomes should be investigated and reviewed by relevant local teams.
- A new metric looking at rates of arthroscopy in patients over 60 years old will be added to the Trauma and Orthopaedic Dashboard to monitor a further reduction in this unnecessary practice. See reference below for reduction in Arthroscopy of the Knee⁶.

⁵ <http://www.boa.ac.uk/pro-practice/boa-professional-guidance-implement-girft-england/>

⁶ Knee arthroscopy: influence of systems for delivering healthcare on procedure rates. Hamilton DF, Howie CR. BMJ. 2015 Sep 24;351

Protected Beds/Wards

- The benefits of protected Orthopaedic beds are well-documented, for example, shorter length of stay, better throughput, fewer cancellations and reduced risk of infection⁷. Professor Briggs recommended that each Board review their situation to assess the potential patient-centred, financial and clinical gains from implementing the approach, with full consideration of whole systems balance and overall benefits.
- At present, few hospitals in Scotland have fully protected Orthopaedic beds/wards for planned surgery patients; NHS Fife is a notable exception. For the purpose of this report, 'protected beds' are defined as dedicated planned surgery Orthopaedic beds with dedicated nursing and other staff. If the ring-fence is breached, then all operating should cease, until the ward is deep cleaned. It is not generally accepted that a separate bay in a ward is considered as ring-fenced as this is insufficiently separate and also implies shared nursing staff.
- Dedicated facility ensures constant, efficient use of resource to the benefit of the patient and value for money (this is in line with the approach to create new Diagnostic & Treatment Centres). Currently, fluctuations in rates of planned admissions are much greater than those for emergency admissions: evidence of poor patient flow. This leads to poor utilisation of facility, reduced quality of care, inevitable last minute cancellations and ward moves creating overall dissatisfaction for the patient. This also results in a negative impact of deskilling and demotivation of ward staff and the effects combine such that the potential benefits of short length of stay are very hard to achieve. For protected beds to be effective for the whole system, not just Orthopaedics, it is important that the volume of surgery is smoothed throughout the week so that bed occupancy remains high, maximising available capacity across the whole system. Simple process control measures, common in manufacturing industries, should be applied to planned admissions to ensure a quality cost-effective service and experience for patients.
- There is an estimated cost of approximately £100,000 in additional patient care for each infected joint case (inpatient and then in community) and joint infection has a huge impact on the patient. In England providers have been advised that protected beds are optimal for safe patient care and there are moves to make this a requirement in the near future.

⁷ <http://www.bmj.com/content/329/7458/149>, <http://www.bjj.boneandjoint.org.uk/content/88-B/7/943.long>,
<https://www.lenus.ie/hse/handle/10147/303576>, Barlow D, Masud S, Rhee SJ, Ganapathi M, Andrews G. The effect of a 'ring fenced' orthopaedic arthroplasty ward on length of stay and surgical site infection - <http://www.ncbi.nlm.nih.gov/pubmed/22717284>, M.R. Whitehouse, N.S. Atwal, J.A. Livingstone. Does Ring-Fencing Improve Efficiency in an Orthopaedic Day Case Unit? - <http://www.iaasmed.com/files/Journal/14/14.4/WHITEHOUSE.pdf>

d) Hip Fracture Care Pathway

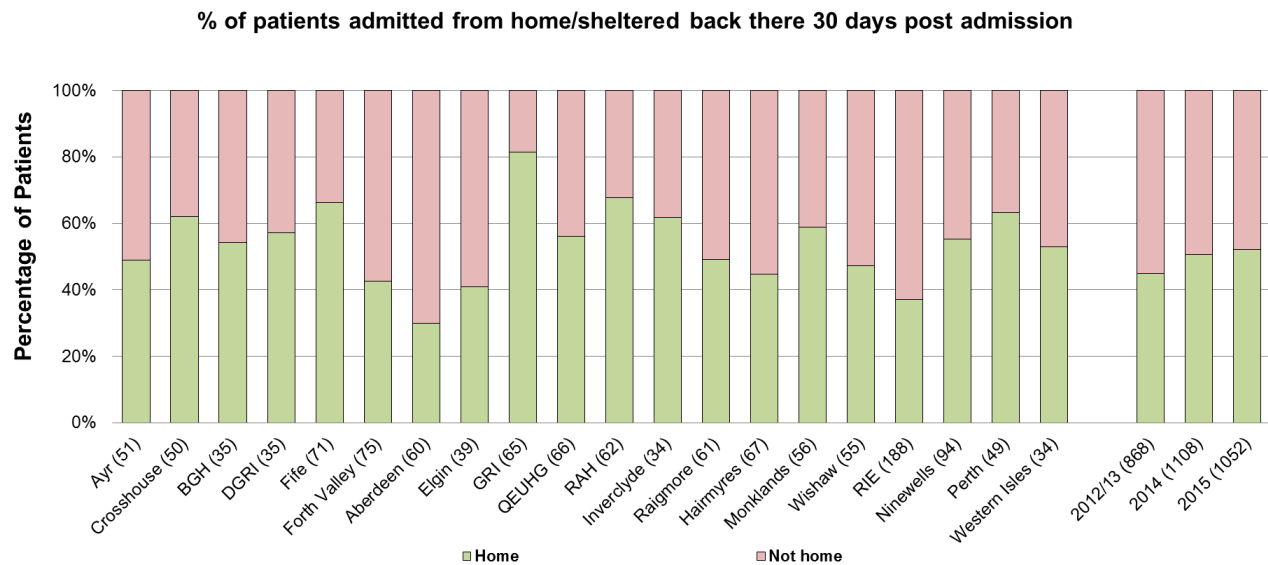
Patient Focus

'If I break my hip I want to be cared for and recover quickly so I can go back to where I live and maintain as much independence as possible.'

- What matters most to these frail elderly patients and their relatives is that they get back to living where they were before they broke their hip as quickly as possible and that they maintain their level of independent living. The *Scottish Standards of Care for Hip Fracture Patients* were released in 2014, with endorsement from all the relevant professional bodies. The expected standards, on the basis of clinical evidence and best-practice, were set out along the pathway of care (see footnote for link⁸). All figures quoted in this section come from the 'MSK Audit' undertaken regularly in each hospital and analysed by ISD. The most up-to-date figures are accessible from the Trauma and Orthopaedic Dashboard.

Achievable Benefits still to be realised:

- In optimising the care of frail older people, a strong measure of the outcome and effectiveness of the overall pathway of patient care is the percentage of patients admitted from home/sheltered accommodation who have returned back there at 30 days post admission. This has increased from 44% in 2012/13 to 52% in 2015. There is clinical evidence that beyond 30 days, patients are less likely to ever return home. This measure will continue to be used to track progress. The variation is from 30% to over 80% across hospitals in Scotland, identifying significant scope for improvement. There is also scope for more patients from nursing care homes to be back and being cared for there in 5-7 days post-operatively.



Source: MSK Audit. Hospital specific data for Nov 2014 to Oct 2015 (Sample size in brackets)

⁸ <http://www.qihub.scot.nhs.uk/quality-and-efficiency/msk-and-orthopaedics-quality-drive/hip-fracture-care-pathway.aspx>

- Significant improvements to the Hip Fracture Care pathway, since the launch of the *Scottish Standards of Care for Hip Fracture Patients*, are working well for patients. The following opportunities for further improvements relate to the principal indicators used to monitor quality care of patients and progress at Boards.
- **Emergency Department and the 'Big Six' Interventions** – Most hospitals have 'Fast-Track' policies to ensure that the required interventions are routinely undertaken and that patients are admitted to the Orthopaedic ward without delay. Six ED interventions have been identified as important to act on (Pain Relief, Bloods, Delirium Screening, IV Fluids, Pressure Areas and Monitoring SEWS Score). The ED part of the pathway is working well at Ayr, Crosshouse and RAH hospitals. A further focus at all hospitals is particularly needed on consistent Delirium Screening and Pressure Areas Inspection (N.B. they may be being undertaken but are not being documented as undertaken).
- **Orthopaedic Admission Assessments** – Cognition, Falls, Nutrition and Pressure Area Assessments are important. The percentage of patients receiving all four within 24 hours of admission is over 60% (up from 37% in 2012/13). Several Boards have revised their admission forms to encourage completion (see weblink on previous page for examples).
- **Time to Theatre** – There is clinical evidence that a delay beyond 48 hours can have a significant impact on patient recovery and mortality. During 2015 the standard of 95% of hip fracture patients to be operated on within 48 hours of admission was achieved until December when there was a drop to only 86%. Senior managers and clinicians at the three hospitals that most regularly have patients waiting beyond 48 hours have been encouraged to look at improving their access to Trauma theatre.
- **Fasting, Fluids and Repeat Fasting** – It is hard to reduce prolonged pre-operative fasting and withholding of oral fluids as theatre lists constantly change and therefore flexibility is required. Some success has been achieved at hospitals who have implemented a 'Golden Patient' system (see section 6). Whilst one day of fasting/ withholding oral fluids is uncomfortable for the patient it is probably not detrimental to their recovery. These patients are, however, mostly frail elderly patients who are often poorly nourished and dehydrated on admission. The absolute emphasis is therefore on minimising **repeat fasting**. Seven hospitals had repeat fasting rates above 28% of patients for October to December 2015. There is an urgent need to address this issue, linked to trauma theatre access and productivity, but also unrealistic planning of which patients are likely to go to theatre that day.
- **Medically Unfit for Theatre** – A small percentage of patients require medical intervention prior to their operation. Delay, however, should only occur if there is a reversible medical condition. Evidence shows that mortality increases with each day of delay. Hospitals with an above average rate are encouraged to discuss their protocol with their Anaesthetic Department (the range is from less than 3% at four hospitals to over 15% at three hospitals).
- **Pre-operative Catheterisation** – There is a range from less than 8% at three hospitals to over 35% at four hospitals. Practice at the hospitals with higher rates should be reviewed to see if it is clinically appropriate to reduce the cases where patients are catheterised. Catheterisation increases the infection risk and delays mobilisation (although it may be necessary in some cases to prevent incontinence that could result in skin damage).

- **Geriatric Input** – Early input for patients with complex co-morbidities is important for their recovery and preparation for discharge. There is a range from no input by the end of day 3 at four hospitals to more than 75% of patients at seven hospitals. With the national shortage of Geriatricians, NHS Dumfries and Galloway use a GP on their ward to manage the complex co-morbidities and social elements of patients’ recovery and preparation for discharge. The GP also reports that this work is appealing from a career perspective. This innovative and problem-solving model works very well and should be commended. The pilot was initially funded by the Scottish Government. Given the ongoing recruitment issue of ortho-geriatricians this approach is encouraged across Scotland. Other hospitals have employed Advanced Nurse Practitioners/Elderly Care Nurses to work with Geriatricians to undertake Comprehensive Geriatric Assessments and to prioritise the patients needing input from the limited Geriatrician resource. Several of the ANP/ECON posts were initially ‘pump-prime’ funded by the Scottish Government and some have now been made substantive by their Board on the basis of demonstrable benefits.
- **Early Mobilisation** – Input from Physio and Occupational Therapists is important and the majority of hospitals have mobilised (or assessed for mobilisation) over 90% of patients by the end of day 2 post-operatively. Hospitals struggling to achieve this are encouraged to look at options such as Physio Assistants mentioned in the ERAS section (Section 5c). Similarly OT input by day 3 is over 80% in seven hospitals, but less than 40% in four hospitals. Both Highland and Fife have prioritised Physiotherapy and OT input as one of the key elements impacting on patient recovery following a hip fracture. This was initially achieved through Scottish Government ‘pump-prime’ funding but, following demonstration of the benefits, has now been made substantive by the Boards.
- **Re-admissions** - There is a range from 3% or less in the top quartile of hospitals to over 7% in the bottom quartile. This is an important measure of how well the pathway is working for patients and should be addressed at the hospitals with higher rates.
- **Mortality** - Mortality by 30 days post-admission also varies significantly from less than 5% in the top quartile to over 10% in the bottom quartile. Any cases are routinely discussed as part of the local Clinical Governance process and higher rates may be due to the case-mix of patients.
- **Length of Stay** - Even with some of the key elements above, such as Geriatrician, OT and Physiotherapy input in place, there remains considerable variation in the length of stay, both in the acute sector and in rehabilitation facilities. Acute LOS ranges from an average of 7.5 days to 16.1 days, with a national average of 13.9 days. Rehabilitation stay ranges from 27 days to 53 days. Total hospital stay ranges from 23 days to 42 days.
- **Discharge Destination and Return Home** - It is also important to look at the proportion of patients discharged straight home following their acute stay rather than to rehabilitation. This ranges from over 50% at seven hospitals to less than 30% at four hospitals. As mentioned at the start of this section, the percentage of patients from home/sheltered accommodation who have returned back there at 30 days post admission is seen as the best single patient-focused indicator of the effectiveness of patient care.

- The variation in the LOS, Discharge Destination and Return Home indicators provide an opportunity for an improvement focus on reducing the use of rehabilitation and on the length of stay for those patients that do require rehabilitation. This would also impact positively on 'bed blocking' problems in acute beds. The Boards with the best combination of the above achievements are Ayrshire and Arran, Dumfries and Galloway, Fife, Tayside and Western Isles.
- High quality care for these frail elderly patients along the whole pathway helps them recover more quickly and be more likely to return to where they were living before, with the same level of independence. It is also more efficient for the service, sets the service up well for increasing future demand and serves as a 'tracer' for other fragility fracture patients.
- A repeat of the full Hip Fracture Audit undertaken in 2012/13 is currently being analysed and will be released in June 2016 enabling a full evaluation of progress and areas still requiring focus at all hospitals.

6. Optimising Use of Theatre Capacity

The second of the four aims of the ACCESS Programme is to make sure optimal use is made of existing Trauma and Orthopaedic capacity - Workforce, Beds and Theatres. Running operating theatres is one of the most expensive resources of NHS Scotland. A recent study estimated that theatre costs (including implant costs) constitute nearly 50% of the costs of a knee arthroplasty, with a further 30% accounted for by general hospital overhead⁹.

The following points identify significant opportunities to increase theatre throughput and reduce the impact of emergency surgery on planned surgery cancellations. Figures quoted in this section are from the Theatres Datamart collated by ISD. The most up-to-date figures are accessible from the Trauma and Orthopaedic Dashboard.

Achievable Benefits still to be realised:

- Delayed theatre start times remain an issue, with the percentage of Late Starts (defined as over 15 minutes) varying considerably by Board. For scheduled planned orthopaedic sessions this ranges from 3% to 56%, with a national figure of 5%. For scheduled emergency trauma sessions the range is from 3% to 34%, with a national average of 21%.
- Cancelled session time (% of session hours cancelled) for scheduled planned sessions, varies from 0.3% to 31%, with a national average of 11%. There is some evidence, however, from the Peer Review Visits that delayed and cancelled theatre times are being under recorded; therefore the national and individual Board pictures should be treated as indicative only and data issues should be investigated.
- A national 'Sprint Audit' of Late Cancellations (May to July 2015) showed that 20% of the cases planned two weeks beforehand did not go ahead and that replacement cases did not always completely fill capacity (N.B. 8% of the cancellations were on day of surgery due to bed issues making replacement cases impossible). Cancellations for patient reasons were also high, suggesting an opportunity to identify ways to reduce this.
- The lack of consistent experienced theatre teams has a significant negative impact on theatre efficiency. This is particularly acute in Trauma and Orthopaedics, where operating equipment is complex and varied. Even for routine cases the surgeon depends on theatre staff being familiar with the equipment and different implant types. This is an issue in many Boards, as is the rotation of theatre staff in others. Theatre staff absence, sickness and recruitment challenges are acute in several Boards. It is recommended that a definition of a dedicated consistent theatre team is developed along with guidelines for theatre staff rotations.
- A mismatch of shift start times, first tasks of the morning for surgeons, anaesthetists and theatre staff and finish times (e.g. early finish times for Recovery staff) is an issue at some hospitals, leading to delays and cancellations and therefore low utilisation. Considerable improvements in throughput have been achieved in hospitals that have tackled this, often by implementing coordinated but staggered shift patterns.
- The reliable supply of sterile, complete and functioning equipment is a big issue at a number of hospitals leading to delays and cancellations and should be addressed urgently. Efficiency can also be increased with a review of the often unnecessarily large array of items in trays.

⁹ Chen A et al - The Knee 22(2015) 640-645

- Teams should look to increase the normal number of major joint replacements per list from three to four. This represents a capacity increase of 33% and, given the current waiting list pressures, should be prioritised. (N.B. In this report 'Four Joints' is used as a proxy for theatre throughput: many lists do not involve all arthroplasty cases or one type of surgery. Also, some lists should be scheduled as training lists with fewer joints and list composition needs to take account of bed availability). Approximately 40% of joints are undertaken at hospitals where four joints are the norm (Lothian, Fife, GJNH and GRI). The majority of hospitals only achieve three joints per list, although several commented that they had previously achieved four. Better utilising the available theatre resource is an area of improvement that should be given priority at all Boards.
- A number of organisations in England are starting to deliver 5 joints on approximately a quarter of their full day lists at high volume units with an average case-mix and dedicated facilities and staff. Hospitals in Scotland should visit a number of these units to understand the approach that is being employed to deliver this.
- At a number of Boards, theatre throughput for emergency cases (*e.g.* fractures) is also extremely low and needs to be addressed urgently. Increased throughput would result in considerable reductions in pre-operative stay, leading to increased bed availability and a better experience for patients as well as a reduced impact on planned surgery cancellations.
- Implementation of the 'Golden Patient' system can improve trauma theatre start times. The first patient for the next day's list is identified the afternoon before, using a set of standard criteria (*e.g.* medically fit, with a clear surgical plan and identified surgeon and anaesthetist). The patient will have been seen by an anaesthetist and be ready to be sent to theatre at an agreed time (8.15am or similar). This system has been shown to improve operation start times and therefore throughput¹⁰. Detailed consultation with the Anaesthetic team is required. The use of the Golden Patient system will be monitored across Scotland to understand where Boards are in adopting this practice.
- Trauma co-ordinators have been employed at a number of Boards (*e.g.* Lothian) and have demonstrated considerable success in reducing delays and increasing quality care for patients. Some of these posts were initially 'pump-prime' funded by the Scottish Government and have now been made substantive by their Board.
- The model of enhancing day case surgery provision at outlying hospitals was discussed at relevant Peer Review meetings. An example is Devon and Exeter Trust who reduced the big central unit and opened units in several smaller local hospitals. Surgeons travel to the smaller units and for those anaesthetists based there, it has had a positive impact on recruitment, making these outlying hospitals more viable and freeing up inpatient capacity at the main hospital. The feasibility of this concept should be explored by a number of Boards.
- It is recommended that a project team at each hospital identify the current barriers to achieving better theatre productivity and trauma throughput. The theatre system dashboard (OPERA at most Boards) should be used to evaluate delays (late starts, down-time between cases *etc.*) as an input to the plan to optimise use of capacity. Other factors such as the use of a Block Room for anaesthetics should be considered (this approach is used very successfully in Newcastle where they achieve 5 joints per list). Theatres are an expensive asset and must be used efficiently.

¹⁰http://www.bjjprocs.boneandjoint.org.uk/content/94-B/SUPP_XXXVII/508.abstract,
<http://qir.bmj.com/content/4/1/u206641.w2670.full>, <http://www.ncbi.nlm.nih.gov/pubmed/23632374>

7. Optimising Use of Beds

The second of the four aims of the ACCESS Programme includes making sure optimal use is made of existing bed capacity. Many hospitals have significant bed pressures. Operations are cancelled on day of surgery leading to unutilised theatre slots, significant impact on the patient and their relatives as well as a huge knock-on effect on waiting times and costly use of non-core capacity. It may also lead to the perverse incentive of admitting planned surgery patients the night before surgery to secure a bed, thus using more bed nights and exacerbating the situation. The following points identify opportunities for better bed utilisation to relieve these pressures. All figures quoted in this section are accessible from the Trauma and Orthopaedic Dashboard.

Achievable Benefits still to be realised:

- **Orthopaedic Footprint** - The average number of beds used by Trauma and Orthopaedic patients is often outside the official 'foot-print' of the Trauma and Orthopaedics Department in many hospitals. Conversely, Orthopaedic wards often have to take medical boarders due to overall hospital bed pressures. All Boards are encouraged to review their Trauma and Orthopaedic footprint of beds (also using the bed occupancy, number of beds per hundred thousand catchment population and number of beds per consultant indicators and benchmarking these with other Boards using the Trauma and Orthopaedic Dashboard).
- **Protected Beds** - Boards should also consider the case for protected beds for planned surgery to remove the practice of admissions the day before surgery, reduce cancellations and length of stay and the potential for costly treatment of joint infection (see Section 5c – Protected Beds/Wards).
- **Day Case Rate** - Increasing the scope of procedures and the percentage undertaken as day case has the potential to significantly reduce bed usage. The percentage of patients admitted as day case, having one of the eight procedures deemed by the British Association of Day Surgery [BADS] to be suitable for day case is 78% nationally. The range is from below 70% at two Boards to above 85% at three Boards (Lanarkshire, Lothian and Forth Valley). Given that the 'BADS basket' is not now considered stretching there remains further opportunity for increasing day case rates. Some Boards have already extended day case surgery into other areas such as shoulder surgery and knee ligament reconstruction. While not routine these are common. A Scottish group, led by SCOT nominated surgeons, could drive the extension of day case surgery.
- **Emergency Admissions Length of Stay** - Emergency LOS varies significantly between hospitals, influenced both by the number of pre-operative bed nights, supported by good access to trauma theatre, as well as the post-operative LOS. Highland should be commended for their Trauma service and optimal use of beds, having both top quartile LOS and top quartile low use of pre-operative bed nights. The figures at Borders are also above average. See Section 5d – Hip Fracture Care Pathway - for opportunities for an improvement focus on reducing acute LOS and the use of rehabilitation for Hip Fracture (and other fragility fracture) patients and on the length of stay for those patients that do require rehabilitation.
- **Emergency Readmission** – Reducing readmissions following planned and emergency surgery helps to reduce unnecessary bed use. For planned surgery a number of models to reduce readmissions are described in Section 5c – Enhanced Recovery. For emergency surgery, the focus should be on reducing 'failed discharges'.

- **Patients with No Procedure** - The percentage of Orthopaedic emergency admission patients with no procedure recorded is over 30% in a number of Boards. Hospitals are encouraged to redesign non-operative patient pathways (*e.g.* for fractured humerus, pelvic rami, osteoporotic vertebral fracture and cellulitic patients). These patients, currently admitted to Orthopaedics, could be better cared for with alternative pathways, *e.g.* support at home or in a rehabilitation setting instead of being admitted to an acute Orthopaedic bed.

8. Optimising Use of Workforce

The second of the four aims of the ACCESS Programme includes making sure optimal use is made of existing workforce capacity. The following points identify opportunities. All figures quoted in this section are accessible from the Trauma and Orthopaedic Dashboard.

Achievable Benefits still to be realised:

Developing Roles

- An on-going theme across the whole healthcare workforce is to encourage consideration of: the best person to do the job; that everyone is working at the top end of their competencies; and, who would be best placed to receive additional training to raise their competencies. This should be considered from admin and auxiliary staff to consultants.
- The potential for a large shift in the treatment of patients from secondary care Orthopaedics to assessment and conservative treatment in the community by AHPs has already been discussed in Section 5a. Leading on from this is the potential for development of effective sub-specialty pathways, with a cohort of patients appropriately assessed and in some cases treated by Extended Scope Practitioners [ESPs] integrated into Orthopaedic Departments.
- Time saved for surgeons in reduced outpatient, fracture clinics and review arthroplasty appointments can be reinvested.
- A Scottish training programme for Surgical Podiatrists to work along-side Orthopaedic surgeons has been launched and is being expanded. Surgical Podiatrists can effectively and safely undertake high volume standard forefoot surgery.
- Many best-practice examples exist of optimised use of certain skill sets. See Section 5d, Hip Fracture Care Pathway, for examples of use of a GP on a ward for frail elderly fracture patients to manage the complex co-morbidity and social elements of patient recovery and discharge and for examples of Advanced Nurse Practitioners/Elderly Care Nurses working with Geriatrician colleagues. See Section 5c, Enhanced Recovery, for an example of achieving a seven day service and early mobilisation of routine patients by training up care workers as Physiotherapy Assistants.

Complex Surgery Profile

- Analysis of the surgeon level data from SMR (between April 2014 and March 2015, available on the Activity Table in the Trauma and Orthopaedic Dashboard) identifies that 50% of all surgeons in Scotland who undertook hip revisions and 63% who undertook knee revisions did less than 5 per annum. Given the complexity of revisions, it was recommended in Board Feedback Reports that the surgical teams should review who should undertake revisions and at which hospitals to ensure they meet the 'family and friends' test as discussed at the meeting. A similar review should be undertaken for other complex procedures such as elbow, shoulder and ankle replacements. See Section 12 for Regional Approaches.
- During the Peer Review visits the issue of locums conducting knee and hip replacements and revisions and the potential increased complication risk was raised at several Boards.
- A similar 'Activity Table' for Trauma procedures is being developed nationally. Boards are encouraged to review this once it is available in the Dashboard.

Surgeon and Activity Distribution

- The distribution of Orthopaedic surgeons per 100,000 of population varies considerably across Scotland. This should only be used as a broad indicator as there are a number of complex factors to consider. A varying proportion of activity is undertaken outwith Boards (i.e. at GJNH, the Independent Sector and patients referred to geographically closer hospitals outside their home Board e.g. Argyll and Bute to GG&C). A third of primary hip and knee replacements are undertaken outwith the Board of residence. At Board level, the percentage varies considerably from less than one per cent at Tayside to over fifty per cent at Highland, Lanarkshire and Forth Valley. The majority of primary hip and knee replacements undertaken outwith the Board of residence are undertaken at GJNH 63%, with 19% conducted by other territorial Boards and 18% conducted by the Independent Sector (April 2014 to March 2015).
- In addition, there are two other factors to be considered when using the Consultants per Head of Population indicator: travel time in job plans for some consultants and the accuracy of the SWISS database (Scottish Workforce Information Standard System database) and it not including locums and consultants paid for by universities. The SWISS workforce figures come directly from the personnel department at each Board. The consultant numbers are broadly correct at most Boards but the figures for other grades are often inaccurate and Boards are encouraged to rectify this.
- During the Peer Review visits it became clear that, in addition to the normal turnover of consultant staff, there have been 16 consultants, appointed to consultant posts who have subsequently left to work elsewhere within the last 5 years, only three moved within Scotland. This is approximately half of the appointments and a worrying trend for services which then have difficulty recruiting. The reasons for early departure should be investigated and addressed if we are to retain high quality staff.
- It was noted at several Peer Review meetings that the impact of not immediately replacing a single-handed sub-specialty surgeon, for example a spinal or ankle surgeon, who leaves or retires from a Board, can have a considerable impact on the workload of neighbouring Boards or indeed patient safety. Careful and pre-emptive succession planning, linked with a clear understanding of patterns of demand, seasonal variation and pathway management across Board boundaries is important in balancing requirements. In some cases, a regional planning approach is required, to identify where and when this is likely to occur and allow appropriate mitigation and joint planning to be put in place. See Regional Approaches in Section 12.

9. Optimising Spend

Reducing the Cost of Implants and Equipment

- Section 5c of this report discusses variation in individual surgeon practice in the use of cemented and un-cemented implants. There is also variation in the range of devices and manufacturers used. This impacts on cost and on the levels of investment tied up in each Board in stock. Clear Board policy confirming the range of implants, to include locums and junior doctors, would contribute to a reduction in variation and in costs.
- Boards, Orthopaedic surgeons (through SCOT) and National Procurement have been working hard over a number of years to reduce implant costs with considerable success. Creating an overall average cost for hip and knee implant procurement per Board has assisted in allowing comparisons of price across Boards. All Boards should continue to use the average costs in the Trauma and Orthopaedic Dashboard to ensure that the costs for both hip and knee implants are reduced to, or below, the national average in Scotland. Minimum known costs in England have been provided to every Board.
- The average cost paid in 2014 for hip replacements varied considerably by Board from £589 to £1,326 (ex VAT). There was less variation in the average cost for knee replacements, which ranged from £1,071 to £1,554 (ex. VAT). Several Boards mentioned that they have reduced these prices since 2014 but there is still scope to reduce costs further.
- Borders and Lothian have collaborated on hip and knee joint procurement. This collaborative approach has enabled a small volume Board to have one of the lowest procurement costs in the UK. This approach is actively encouraged as it negates issues of smaller Boards having higher procurement costs due to lower volume.
- Theatre delays and cancellations result from breached packaging of sterile trays and damaged items (as discussed in Section 6) and resource efficiency issues arise from an unnecessarily large array of items in trays. Several hospitals have addressed these issues and learning can be spread.
- Loan-kit, used for a small volume of cases where unusual equipment is required which is not routinely available at the hospital concerned, can be expensive. The usual practice is that the cost of the implant is charged at the full rate (rather than the negotiated lower cost). Loan-kit cost information should be part of a monthly review of theatre expenditure and cascaded to surgeons and compared between Boards to review how costs can be reduced. Ideally loan-kit costs should be negligible if a network approach is followed.

Clinical Value of Procedures

- Clinicians have expressed an interest in reviewing the impact of more consistent decisions regarding not listing patients unlikely to benefit sufficiently from certain procedures *e.g.* knee arthroscopy and for alternatives such as conservative treatment to be used instead.
- It is difficult to establish an optimal level of intervention for different procedures. The Rates per Head of Population column in the Activity Table from SMR (available from the Trauma and Orthopaedic Dashboard) is therefore useful only as an indicator for further investigation in Boards where the rate is particularly low or particularly high. High rates should be investigated along with patient outcome data. This can also be benchmarked against Scotland-wide intervention rates available for hips and knees, compared with other countries and also used as an indicator for future demand.

Learning From and Reducing Litigation

- The average annual cost for Trauma and Orthopaedic litigation in NHS Scotland for the four years between 2011/12 and 2014/15 was over £1.25m.
- Only a few Boards have a rigorous process of passing on details of successful litigation cases or settlements to the Orthopaedic Department. A robust process must be put in place at each Board to ensure that cases can be investigated and discussed and, where relevant, lessons learnt (N.B. This approach should be replicated for non-orthopaedic cases as well).
- A national analysis of litigation cases is planned through the Scottish Committee of Orthopaedics and Trauma. This requires specific permission from every Board to allow their data to be used. This analysis will be passed back to individual Boards and learning points will be disseminated to support uniform improvements in patient-centred, safe, effective care.
- The average Board cost of litigation per Orthopaedic spell varied from £1.18 to £49.36, with a national average of £15.47. Some caution should be exercised when looking at this data at Board level due to the small base size of number of payments. One large litigation payment would distort an individual Board average considerably. Units where more complex surgery is carried out may suffer higher levels of litigation settlement because of the nature of their work, however these are areas where national review would be key.

10. Patient Experience

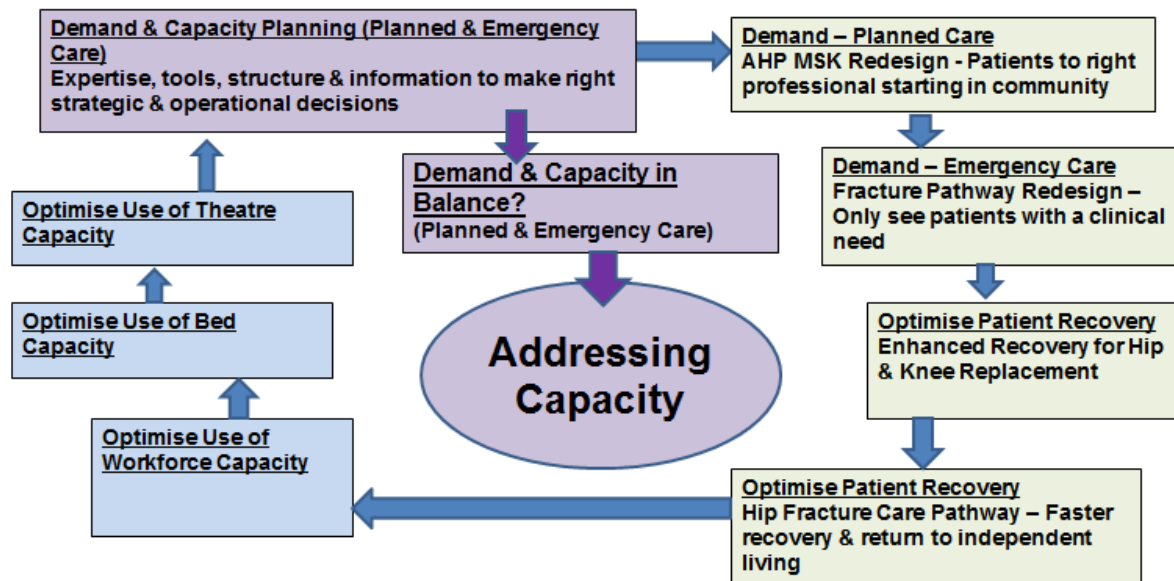
- Assuring a positive patient experience is at the heart of all service delivery and improvement work. The Peer Review process therefore includes a Patient Experience score from NHS Scotland's Inpatient Experience Survey. The indicator used is the percentage of patients responding 7-10 (top end of the scale) for 'Overall how would you rate your experience?'
- Analysis of the triggers resulting in poor satisfaction scores has been undertaken by Professor Colin Howie et al at NHS Lothian. Cancelled planned admissions (due to bed shortage), bed boarding and transfer/moving patients between wards prior to discharge are possibly the most significant process factors affecting satisfaction. This analysis should be shared with and repeated within each Board, to assist in improving satisfaction scores.
- The satisfaction scores are a reflection of the whole service, both for emergency and planned surgery care. Trauma patients tend to give lower satisfaction scores than planned surgery patients. Further analysis is required to establish whether the scoring methodology is robust enough to allow differentiation and independent scoring of the trauma and planned surgery service. This is already being done on an informal basis by some larger Boards (e.g. Lothian).

11. Addressing the Demand and Capacity Imbalance

The third of the four aims of the Trauma and Orthopaedic ACCESS programme is to support effective demand and capacity planning at each Board to address any capacity gaps to deliver safe and timely care for patients now and in the future as demographics change (*i.e.* top left and central purple boxes in the diagram). Capacity imbalance may be addressed through further benefits realisation, service reconfiguration, regional solutions or mid- to longer-term national investment.

Trauma & Orthopaedic ACCESS

Addressing Core Capacity Everywhere in Scotland Sustainably



- NHS Scotland faces a significant challenge in balancing the currently achieved activity levels of Trauma and Orthopaedic services with levels of demand, both in relation to recurrent levels of capacity needed and also to one-off short term capacity required to remove identified backlogs. Current dynamics within Trauma and Orthopaedics require the removal of the backlog of patients waiting for an outpatient appointment; following the conversion through to surgery; preparation for demographic changes increasing demand for emergency and planned services and ensuring that demand for one does not destabilise the other.
- It is therefore essential that NHSScotland plan ahead collectively to ensure that there is adequate, well-utilised capacity at sub-specialty level to treat patients safely and effectively within waiting times standards. The *Getting Ahead Programme*, established to support sustainable whole systems planning and management will support Boards in using a structured approach to quantifying capacity and activity plans, and addressing remaining gaps through further benefits realisation, service reconfiguration, regional and national solutions.
- This includes the planned management of geographic variation in demand and the likely future changes based on demographics, with a full understanding of patient flows, so that the right services can be provided in the right place.
- Comprehensive health intelligence is required to ensure realistic planning takes into account the complex interrelationship between emergency trauma, planned treatments, first outpatient assessment, diagnostic tests and follow-up/return requirements.

12. Conclusions

Benefits Realisation

- The immediate focus is on embedding quality of patient care and efficiency gains from the four Quality Drive workstrands everywhere in Scotland as the norm, along with optimal capacity utilisation relating to workforce, beds and theatres:
 - Getting patients on the right pathway starting in the community - AHP MSK Redesign;
 - Patients only attend clinic if there is clinical need - Fracture Pathway Redesign;
 - Optimising patient recovery after joint replacement - Enhanced Recovery;
 - Optimising care of frail older people - Hip Fracture Care Pathway.
- Delivering the benefits identified in this report will contribute significantly to improvements in patient care and addressing the capacity challenge. Seeing each Board's Trauma and Orthopaedic Action Plan through to the point of gaining maximum benefits is the hard part. The Trauma and Orthopaedic ACCESS team at the Scottish Government are supporting this process.
- If every Board addresses every issue in this report, then we will have a much more robust and resilient Trauma and Orthopaedic Service in Scotland, with much less geographic variation for patients. The National MSK and Orthopaedic Quality Drive has been working towards this for some years. This process has been significantly enhanced through the national ACCESS programme and the Peer Review process, with experienced input from the GIRFT Team and the wealth of benchmarking indicators in the Trauma and Orthopaedic Dashboard. A level of intelligence that we have never had before has been drawn together. This provides a clear evidence base for each Board about where they must effect change in their local Trauma and Orthopaedic service for the benefit of all stakeholders and in order to address environmental drivers (political, economic, social and technological), with patients right at the centre.
- It is the detail of this that must and will form the basis of each Board's Action Plan. This must be driven in each organisation and each health community, supported through high level clinical and managerial leadership and cultural change to encourage ownership and identification of solutions at all levels within the service. This will result in recognising best practice and effecting exemplary change which is embedded and enduring and which will support an optimal delivery system where the environmental factors are finely balanced to allow the delivery of safe, efficient and effective care. Improvement methodology, such as LEAN, should be applied with the culture of change, ensuring that those who engage can easily see the benefits for patients.
- Adoption, adaptation, spread and embedding will support Trauma and Orthopaedic services across Scotland that are fit for purpose now and in the future.

Developing Services

- In order to maximise the immediate gains from these identified benefits, additional gains can be made by reviewing and developing the way in which services are provided.
- At Peer Reviews variation in quality, cost, theatre efficiency, bed utilisation and asset allocation were discussed. It can be difficult to agree a correct level of provision, acceptable complication rate, or cost but by comparing across similar systems, outliers can be highlighted and solutions suggested by those units achieving successful and cost-effective, levels of care. Only by quantifying patient outcome can we calculate the value of a procedure or treatment.

- By reducing infection (and other complications), for example in joint replacement, our patients and the NHS budget benefit. By highlighting prolonged lengths of stay, for example in acute and rehab for hip fracture patients, in hospitals with bed pressures, bed shortages could be reduced. By looking at theatre throughput, the need for more theatres could be more accurately established. In trauma a number of Boards have prolonged times to theatre following admission with a fracture because of lack of, or inefficient use of, emergency theatre time, causing more bed problems and discomfort for our patients. Better access to emergency theatre would free up much needed beds.
- Development of further day case facilities could support the effective use of day case treatment as the norm for a growing range of procedures and an on-going shift from inpatients, to day cases and outpatient treatment where clinically appropriate. By definition these procedures are carried out on relatively fit patients, requiring no high dependency facilities and could be provided in local hospitals with specialist surgeons visiting from neighbouring hospitals to provide expertise. Extending the scope of day case surgery to areas where many leading units are performing more complex surgery (e.g. shoulder surgery and knee ligament reconstruction) gives scope for further care improvements and efficiencies.
- Further approaches could be used to shift the emphasis of the treatment of minor trauma from inpatient to day case, or to planned admissions a few days later.
- Optimising the use of clinical skills and competencies in each locality to allow high volume routine procedures to be undertaken in-house will maintain the integrity of case-mix to ensure sustainable provision of emergency services at a local level.
- Variation in procedure rate per head of population is often used to highlight areas of over- or under- provision. For Orthopaedics in Scotland, while there is some variation, it is not as extreme as elsewhere or as wide as in other specialties (perhaps because of the Orthopaedic improvement programme working over the last ten years). Clinicians have expressed an interest in reviewing the impact of more consistent decisions regarding clinical value and developing protocols to reduce listing patients unlikely to benefit sufficiently from certain procedures *e.g.* knee arthroscopy in older patients.
- The creation of protected planned surgery beds in existing wards and in the new Diagnostic and Treatment Centres, but with an integrated Trauma and Orthopaedic workforce for the necessary flexibility and smoothed flows of surgery volume across the week, has the potential to result in optimal bed use, reduced infection, shorter length of stay, fewer cancellations and a high productivity environment with financial and clinical gains for whole-systems balance and patient-centred care.

Regional Approaches

- There are a range of capacity solutions that can be considered and planned on a regional basis. The National Planning Forum and the Regional Offices have an important function in reviewing and considering regional or indeed national solutions.
- Some Boards have enough overall asset but because of disposition have difficulty supplying a reliable and sustainable service. Regional solutions would benefit the quality of patient care and efficient use of resources.

- Many more technical procedures are available now than a few decades ago; what was unusual (arthroplasty) has now become common place; the techniques of revision surgery and the management of more unusual complex fractures (pelvis and tibia) are more specialist, yet service delivery remains largely unchanged. In some areas (*e.g.* Queen Elizabeth Hospital Glasgow) change has occurred, yet in a number of regions the provision of a full service at all hospitals with an Orthopaedic unit has led to inefficient use of resource, with units struggling to provide quality care and failing to attract and retain staff of all grades. A detailed review of options has been published as part of the Monitor report (see link at bottom of page 19).
- Boards are reviewing critical volumes for complex work; with a view to becoming part of a network for spinal surgery, joint infection management, joint revisions and shoulder, elbow and ankle replacement. These areas require significant expertise, minimum levels of throughput to maintain individual competencies and are expensive in terms of loan-kit if the activity is dispersed across all hospitals.
- Some networks, based on a hub-and-spoke model, already work well, such as the national services for patients with spinal cord injuries and brachial plexus problems. Others require more work, with clinicians from the hub visiting the peripheral units that they serve and establishing relationships with the local clinicians. It is important that, in line with the concept of 'realistic medicine' and avoiding over-treatment, outreach services are provided from the specialised units to the local services where the pathways start (as recommended in both the *CMO's Annual Report* and *Clinical Strategy 2016*). This could reduce unnecessary referrals to the specialised units and potentially some over treatment. Critically, a trusted relationship is established between 'hub' and 'spoke' clinicians so that there is a shared understanding of pathways of care and an open conduit for urgent referral.
- On occasion, operational challenges have resulted in temporary inter-Board working. Ongoing joint recruitment, retention, succession planning and creation of regional services are supported, taking full consideration of levels of geographic demand and optimal models of service provision, with realistic workforce planning. Associated management of regional-level training opportunities for extended roles such as surgical podiatrists could also achieve enhanced manpower.
- Successful regional services must be underpinned by firm health intelligence, financial considerations, detailed understanding of capacity, demand and activity and tight management of referral patterns and patient flows according to the models established. Also streamlining of booking practices, strong communication with GPs and other referrers and close management of patients' expectations in accordance with regional services and flows, clinical ownership and patient responsibility must each be taken into account.

Additional Capacity

- The recent announcement by the First Minister of additional investment in the development of six new Diagnostic and Treatment Centres provides a significant opportunity for stabilising services, including Trauma and Orthopaedics. Long range Trauma and Orthopaedic demand forecasts have concluded that a growing elderly population, increasing intervention rates and changing models of care mean that additional capacity is required across Scotland to respond to the current and projected levels of demand for planned surgery. Initial indications are that some of the centres will undertake high volume, non-complex procedures like hip and knee replacement.

- Planning for these centres is at a very early stage and will require careful ‘co-design’ by key stakeholders. The intention is that by ‘protecting’ planned care capacity for key high volume procedures, these facilities will operate at optimal efficiency, and for Orthopaedics, fully realising the opportunities set out in this report.
- Furthermore the centres will be exemplars in delivering according to a ‘Target Operating Model’ of evidence based care and linking the planning of planned and emergency services, and the streamlining of pathways in and out of acute care through fully integrated local services and workforce. The Diagnostic and Treatment Centres are therefore part of a whole system model which includes creating greater resilience in existing acute emergency and planned care facilities, protecting planned care capacity, but not separating it.
- In planning any new facility, including the new Diagnostic and Treatment Centres, optimising patient flows and balancing out demand and capacity, will be important. This includes ensuring that local services meet the recommendations in this report and have sufficient critical mass and a balanced case-mix, to ensure clinical skills and a wider skills mix are fully maintained for the provision of a balanced planned surgery and emergency care service. This will be important to staff trauma on-call rotas, staff morale and recruitment for example.

Momentum for Change

- The most encouraging aspect of the Peer Review visits was the coming together of managers and clinicians around a common goal: our patients, acknowledging problems and identifying solutions. Healthy organisational culture has been enhanced, recognising the need for a sustainable workforce around integrated care through effective leadership. The data has been available for some time but has not, until development of the Dashboard and the Peer Review visits, been accessible from a single location. This programme has used data to engage, increase awareness and promote meaningful change. The partnership with the GIRFT Team, bringing their wealth of experience from England, Wales and Northern Ireland, and the professional input from the British Orthopaedic Association, has been invaluable.
- The valuable knowledge-base will be fed into the national planning for planned and trauma care in Scotland. It is essential that our existing Trauma and Orthopaedic services around Scotland demonstrate the many elements of best practice; built on solid foundations and that they continue to function in a stable manner, integrated, particularly in terms of workforce, with the investment in additional capacity at the new locations across Scotland.
- Significant and evidenced gains have already been made. There is clear direction with further benefits to be gained from adaption, adoption and optimised delivery of the evidenced quality care and efficiency benefits and sharing of success.
- Each Board has a realistic Action Plan and access to the Trauma and Orthopaedic Dashboard to monitor and benchmark progress.
- To achieve the fourth aim of the Trauma and Orthopaedic ACCESS programme - To share success and create greater resilience in local Trauma and Orthopaedic services in each Board - we all need to work together to ‘Close the Loop on Action’ for the last part of the circle to Address Core Capacity Everywhere in Scotland Sustainably.

13. Recommendations

The whole of the body of this report is made up of detailed recommendations for achievable benefits still to be realised (based on the Peer Review discussions, Feedback Reports and Dashboard in particular). Each Board's Action Plan is expected to incorporate how they will deliver these and is expected to be a dynamic document. Implementation is key, as is measurement of improvement. The Peer Review visits have identified what needs to happen and uniquely now, the Trauma and Orthopaedic Dashboard allows us all to monitor change.

A summary of the recommendations is set out in Section 1.

Appendix A – Trauma and Orthopaedic Dashboard

The indicators in the Trauma and Orthopaedic Dashboard cover each of the aims of the ACCESS programme. It contains a wide range of clinical quality, pathway process, patient outcome and capacity utilisation indicators. The Dashboard enables users to access regularly updated data for their own hospital/Board and gauge their quartile position compared to others. They can also view data for other hospitals/Boards to identify examples of best-practice or to see indicators for a Board treating cohorts of their patients.

There is a green square where a hospital is in the top quartile for an indicator, a yellow square for the middle two quartiles and an orange square for the bottom quartile.

Regular updates – All indicators in the Dashboard are updated on a frequency cycle of importance to the information concerned. For example, the Hip Fracture Care Pathway indicators come from the ‘Rolling Audit’ data collected one week in four at each hospital and on a quick quality assurance/analysis turn around to make it available in the Dashboard within three weeks of collection. This enables teams to monitor the impact of tests of change and sustainability quickly. Other data is updated on a quarterly cycle and some, for example, the five year revision rate for hip and knee replacements from SAP, is updated on an annual basis.

The following is a section of the Enhanced Recovery indicators section of the Dashboard:

Workstrand C - Enhanced Recovery - Is patient recovery after joint replacement being optimised at your hospitals?

Indicator	-	Hospital	Board	Scotland	England	
1. % Patients Not Admitted on Day of Surgery	%	74.4%	48%	36.8%		Orange
2. % PM Patients Fasted for more than 6 hours before surgery	%	66.7%	81.8%	60.9%		Yellow
3. % Patients who had Oral fluids stopped for more than 4 hours before surgery	%	53.5%	45.2%	48.1%		Yellow
4. % Patients who had IV Fluids stopped after midday on Day 1 post-op	%	0%	1%	6.7%		Green
5. % Patients who were Mobilised after midday on Day 1 post-op	%	2.3%	8.2%	18.8%		Green
6. % Patients Catheterised	%	39.5%	26.5%	13.8%		Orange
7. Post-op LOS - % of patients in acute orthopaedic care for more than 5 days	%	14%	14.3%	22.5%		Green
8. Primary Hip & Knee Replacement Revision Rates (patients aged 65+)						
a % Primary Hip Replacements revised within 1 year	%	0.5%	0.2%	0.9%		Yellow
b % Primary Hip Replacements revised within 5 years	%	0.5%	0.6%	2.5%		Green
c % Primary Knee Replacements revised within 1 year	%	0.8%	0.6%	0.4%		Orange
d % Primary Knee Replacements revised within 5 years	%	0.5%	2%	2.8%		Green
9. Mortality at 90 days (patients aged 65+)						
a After Primary Hip Replacement	%	0%	0%	0.3%		Green
b After Primary Knee Replacement	%	0.4%	0.2%	0.3%		Orange
10. Complications Rates during Inpatient Stay or Re-admission (patients aged 65+)						
a Infection within one year of Primary Hip Replacement	%	0.5%	0.5%	1.2%		Yellow
b Infection within one year of Primary Knee Replacement	%	0.9%	0.8%	1.1%		Yellow

a) Access to the Dashboard

Anyone involved in improvement of Trauma and Orthopaedic services can request access. The link to the Dashboard is - [Trauma & Orthopaedic Portal](#). If you have not already got a username/password and had 'Trauma and Ortho Portal' added to your ISD user account, please follow the instructions below:

Users who already have an LDAP username/password (it is the same as the LDAP/UNIX one you may already have for other ISD systems). You still need to get specific permission for the Trauma and Orthopaedic Portal. Go to [NSS User Access System](#). Once logged in please select 'Request new access' from the menu, then select the 'Trauma & Orthopaedic Portal' from the drop down list and input your details. Once you have submitted your request an email will be sent to the Trauma and Orthopaedic ACCESS project lead for your Board to approve your request. Once approved, you will receive an email with a link to the Trauma & Orthopaedic Portal.

Users who think they already have an LDAP username/password but have forgotten them. Please contact the Customer Support desk via e-mail nss.csd@nhs.net or phone 0131 275 7777 and then follow the instructions above. **Users who do not have an LDAP username/password** - Please register for one on [NSS User Access System](#), click the 'register' button and then follow the instructions above.

If you have any questions, contact the team at: NSS.TraumaandOrthopaedicPortal@nhs.net

A monthly email pointing towards indicators that have been updated is sent out to all users to encourage use of the indicators to monitor improvements and sustainable change. Addition of new users and user activity at hospital level will be monitored to gauge engagement with the Dashboard.

b) Development of the Dashboard

Hip Fracture Care Pathway – As discussed in the report, in order to strengthen the aim of getting as many patients home as soon as possible, the measure for 'Percentage of Patients from Home/Sheltered, back there at 120 Days' is going to be brought in to 'Percentage at 30 Days'.

Scottish Arthroplasty Project – Surgeons will be able to see their own 'CUSUM' charts for revisions and the complications measured in SAP. They will be able to access their individual cases to review if they indicate a required change of practice. This will enhance the existing 'SAP outlier' process as surgeons will be able to easily access their own very current data and take pro-active actions before the escalation process starts.

Revised Activity Table – The existing categories of procedures and codes included for both Planned and Emergency Activity are being revised. The new Activity Table will be included in the Dashboard.

Theatres Data – New indicators for Operative, Anaesthetic and Turnover Time are being developed.

Headcount - The data comes directly from the SWISS (Scottish Workforce Information Standard System) database via the personnel department at each Board. It is important that it is correct as this data is used for additional calculations e.g. Consultants per 100,000 population. Individual Boards have been notified where discrepancies were found, however an ongoing system of checking that this data is correct is required, so that each time the data is submitted to SWISS it is up-to-date. Care should be taken on guidance regarding how GP Trainees, locums and university employees, should be included.

Please contact Kate James (contact details on front cover) with any development suggestions.