NATIONAL INSTITUTE FOR HEALTH AND   
CARE EXCELLENCE

Quality standards

Briefing paper: Joint replacement (primary): hip, knee and shoulder

**Quality Standards Advisory Committee meeting**: 29 September 2021

# 

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1. Introduction

This briefing paper presents a structured overview of potential quality improvement areas for joint replacement (primary): hip, knee and shoulder. It provides the committee with a basis for discussing and prioritising quality improvement areas for development into draft quality statements and measures for public consultation.

This briefing paper includes a brief description of the topic, a summary of each of the suggested quality improvement areas and supporting information.

Recommendations selected from the key development source are included to help the committee in considering potential statements and measures.

* 1. Development source

The key development source referenced in this briefing paper is:

[Joint replacement (primary): hip, knee and shoulder. NICE guideline NG157](https://www.nice.org.uk/guidance/ng157) (2020).

1. Overview
   1. Focus of quality standard

This quality standard will cover care for adults before, during and after primary elective hip, knee or shoulder joint replacement. It will not include revision joint replacement, joint replacement as immediate treatment following fracture or as treatment for primary or secondary cancer affecting the bones.

* 1. Definition

Joint replacement (also known as arthroplasty) refers to surgical replacement of a joint. The procedure involves replacing a worn or damaged joint with a new, artificial one, using a prosthesis or implant. A ‘primary’ joint replacement is the first joint replacement operation on a particular joint.

Hip, knee and shoulder joint replacements are performed to reduce pain and restore function in people with severe disability, most commonly from osteoarthritis when non-surgical options have been exhausted.

The type of operation offered varies and includes a wide range of joint implants with differing designs, materials and bone fixation methods. This variability may produce different outcomes, both in short-term function (for example, pain and complications) and in long-term joint survival (how long and well the implant works before revision surgery to replace it with another joint replacement is needed). Many joint replacements can last 10 to 20 years before a revision procedure is needed, although this is not the case for all types.

**Total hip replacement (THR)**

Surgery involves replacing the ball and the socket parts of the joint with artificial parts.

**Knee replacement**

Surgery consists of either:

* Total knee replacement (TKR), which involves replacing both sides of the knee joint. An implant is attached to both parts of the shin bone and thigh bone (National Joint Registry (NJR) [Public and patient guide to the NJR’s 14th annual report, 2017](https://www.njrcentre.org.uk/njrcentre/Reports-Publications-and-Minutes/Public-and-Patient-Guide)).
* Partial knee replacement (PKR), which involves replacing part of the knee joint. An implant is attached to only one part of the shin bone and one part of the thigh bone [(NJR (2017).](https://www.njrcentre.org.uk/njrcentre/Reports-Publications-and-Minutes/Public-and-Patient-Guide)This procedure is also known as a ‘unicompartmental’ or ‘unicondylar’ knee replacement.

During TKR, patella resurfacing can be undertaken. This involves removing the under surface of the kneecap (the patella) and attaching a separate implant to the back of the kneecap, to articulate and fit smoothly with the femoral (thigh) implant.

**Shoulder replacement**

Total replacement of the shoulder joint consists of:

* ‘Conventional shoulder replacement’, where the existing ball and socket are replaced with a new ball and socket, mimicking the normal anatomy of the shoulder.
* ‘Reverse total shoulder replacement’, where the normal anatomy of the shoulder is reversed: the ball part of the joint is replaced with a socket, and the socket part with a ball.

A group of muscles and associated tendons form the rotator cuff, which controls movement of the arm and helps hold the joint together. A reverse procedure tends to be used in patients with severe arthritis and degeneration of the bone, and very weak muscles in the shoulder (for example, due to a torn rotator cuff muscle). It allows the patient to use other, more able muscles to mobilise the joint [(NJR, 2017)](https://reports.njrcentre.org.uk/patient-guide).

‘Humeral hemiarthroplasty’ involves replacing the top of the upper arm bone with a prosthesis, after shaping or removing the top of the bone ([NJR, 2017](https://reports.njrcentre.org.uk/patient-guide)) following a previous fracture of the bone.

* 1. Incidence and prevalence

Hip, knee and shoulder joint replacements are among the most common orthopaedic operations performed in the UK. [NJR Reports](https://reports.njrcentre.org.uk/) for 2019 show that in NHS hospitals 59,873 primary hip replacements, 62,407 knee replacements and 5,966 shoulder replacements were carried out. 37,877 primary hip replacements, 41,836 knee replacements and 1,587 shoulder replacements were carried out in independent hospitals, which include operations for NHS-funded patients. In independent sector treatment centres, 3,634 primary hip replacements, 4,263 knee replacements and 102 shoulder replacements were carried out, which include operations for NHS-funded patients.

Equivalent data for 2020 show that in NHS hospitals 29,334 primary hip replacements, 25,956 knee replacements and 2,967 shoulder replacements were carried out. 27,044 primary hip replacements, 25,141 knee replacements and 1,040 shoulder replacements were carried out in independent hospitals, which include operations for NHS-funded patients. In independent sector treatment centres, 2,246 primary hip replacements, 2,263 primary knee replacements and 47 shoulder replacements were carried out, which include operations for NHS-funded patients.

Osteoarthritis is more prevalent among people aged 45 and over, women, and people who are obese. This is reflected in demographic data ([NJR, 17th annual report 2020, hereafter NJR 2020)](https://reports.njrcentre.org.uk/) about people who had joint replacement surgery in 2019, based on: 95, 677 primary hip replacements, 103, 617 knee replacements and 7,294 shoulder replacements. 90% of hip, 98% of knee, and 59% of shoulder primary joint replacements performed in 2019 were due to osteoarthritis.

Demographic data of people who had hip, knee and shoulder surgery reported in [NJR (2020)](https://reports.njrcentre.org.uk/) also includes the average age for males (M) and females (F), and average BMI:

* Hip: 67.1 (M), 69.4 (F). BMI: 28.8 (overweight)
* Knee: 68.8 (M), 69.2 (F). BMI: 30.9 (obese)
* Shoulder: 69.5 (M), 73.5 (F). BMI: Not stated.

The data also highlights that a greater proportion of females than males had primary hip, knee and shoulder replacements (60%, 56% and 70%, respectively). The infographic for 2020 ([NJR 18th annual report, 2021, hereafter NJR 2021](https://reports.njrcentre.org.uk/)), is based on fewer primary procedures (54,858, 50,904 and 3,833 primary hip, knee and shoulder replacements respectively) but reflects the same demographic characteristics. Osteoarthritis is more prevalent among people living in deprived areas.

NHS patients having hip or knee replacements are invited to complete Patient Reported Outcome Measures (PROMs) questionnaires as part of [NHS England’s PROMs programme](https://digital.nhs.uk/data-and-information/publications/statistical/patient-reported-outcome-measures-proms/finalised-hip-and-knee-replacement-april-2019---march-2020). They are asked about health and quality of life before their operation, and about their health and the effectiveness of the operation at 6 months. The most recent finalised data (April 2019 to March 2020) shows 97% of patients reported improvement following hip replacement and 94% following a knee replacement 6 months after surgery. Around 45% of people reported ‘excellent’ satisfaction with their hip surgery, but only around 30% of people after knee surgery. Around 46% of people reported that they found it ‘extremely difficult or impossible’ to kneel and get up again after a knee replacement; around 16% reported usually experiencing moderate or severe pain from the hip (those reporting the ‘most severe’ scores). [GIRFT 2020](https://www.gettingitrightfirsttime.co.uk/surgical-specialty/orthopaedic-surgery/) highlighted that average length of stay for both THR and TKR has reduced by a fifth between 2013/14 and 2018/19, to 4.16 and 4.11 days respectively.

* 1. Service delivery

Key parts of the joint replacement pathway are information and decision-making to inform the decision to have surgery, information about the recovery process and the likely risk of future surgery. Preoperative rehabilitation prepares patients for surgery, which may include physiotherapy, occupational therapy, counselling and education. It aims to optimise the outcomes of surgery, including length of stay. After surgery, patients have rehabilitation as an inpatient and following discharge from hospital.

The [Getting It Right First Time (GIRFT) orthopaedic follow-up report (2020, based on UK data, hereafter, GIRFT 2020](https://www.gettingitrightfirsttime.co.uk/surgical-specialty/orthopaedic-surgery/)), reported improvements in service delivery against metrics and recommendations published in the first report, which covered England only [(British Orthopaedic Association (BOA), 2015).](https://www.gettingitrightfirsttime.co.uk/surgical-specialty/orthopaedic-surgery/)  These included:

* Reduction in the volume and total cost of litigation claims.
* Allocation of elective surgery to ‘cold’ sites.
* Changes in theatre practice and ensuring protection of ‘ring-fenced’ beds for elective patients.
* Development of networks to reduce the proportion of surgeons performing low-volume procedures, which are typically associated with poorer outcomes.
* Recognition of the need to invest in rehabilitation services, to increase function and quality of life, and reduce length of stay, based on a report on rehabilitation services developed in collaboration with the Chartered Society of Physiotherapy.

[NHS England’s Long Term Plan](https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf) sets the ambition to bring care closer to home for patients. Work is being undertaken as part of the supporting Elective Care Transformation Programme to enable patients to have direct access to [Musculoskeletal (MSK) First Contact Practitioners](https://www.england.nhs.uk/wp-content/uploads/2019/05/elective-care-high-impact-interventions-first-contact-practitioner-msk-services-specification.pdf) (physiotherapists with advanced clinical practice skills). MSK First Contact Practitioners provide support in a range of areas, including self-management, rehabilitation, referrals and collaborative working. People who have had orthopaedic surgery can be directed to them.

Musculoskeletal care is one of [NHS England’s 3 priorities for 2021/22](https://www.england.nhs.uk/publication/2021-22-priorities-and-operational-planning-guidance/), and operational planning for 2021/22 acknowledges the need to restore services and reduce care back logs directly caused by the COVID-19 pandemic. [Best MSK Health Collaborative](http://arma.uk.net/bestmskhealth-programme-launch/) (NHS England and NHS Improvement) was launched in 2021. Its work aligns with existing programmes and is informed by NHS priorities. Overall aims include delivering high-quality, personalised integrated care across end-to-end pathways. The work is carried out in collaboration with GIRFT; relevant workstreams include the [High Volume Low Complexity (HVLC) Programme](https://www.gettingitrightfirsttime.co.uk/bpl/hvlc/), aimed at supporting elective recovery and the development of standardised patient pathways across regions.

There is also emergent work concerning personalised support for people with musculoskeletal conditions who are on waiting lists.

1. Summary of suggestions
   1. Responses

A topic engagement exercise was first carried out 02/03/20 to 03/04/20. Responses were received from:

* 5 registered stakeholders
* 2 specialist committee members
* NHS England and Improvement Patient Safety Division.

The topic was then paused as NICE changed priorities in response to the coronavirus pandemic. Following restart, and due to the length of time that had passed, a second topic engagement exercise was carried out 13/07/21 to 27/07/21. Stakeholders were given the opportunity to replace their original comments or submit comments for the first time:

* 7 registered stakeholders submitted first time comments
* 1 stakeholder updated their original response
* 4 stakeholders kept their original comments (including a ‘no comments’ response)
* 5 specialist committee members submitted first time comments
* 1 specialist committee member updated their original responses
* 1 specialist committee members kept their original comments
* NHS England and Improvement Patient Safety division replaced their response
* The National Clinical Director for Musculoskeletal Conditions NHS England and Improvement submitted a response.

The responses have been summarised in Table 1 for further consideration by the committee. Full details of all the suggestions provided are given in Appendix 1 for information.

* 1. Priorities for committee discussion

Table 1 Summary of information available for suggested areas for improvement

**Note**: Except for implant (prosthesis) errors and VTE prophylaxis, published current practice was not identified for shoulder joint replacement.

| Suggested area for improvement | Stakeholder | In scope | Guideline recs | Current practice evidence | Existing QS statement | Priority to discuss? |
| --- | --- | --- | --- | --- | --- | --- |
| **Self-management and preoperative care** |  |  |  |  |  |  |
| * Self-management | NCD, VA | Yes | No | Yes | Yes | **No** |
| * Preoperative care | AGILE, BOA (end. BHS), NCD, NE, SCMs | Yes | Yes | Yes | No | **Yes** |
| **Shared decision making information** |  |  |  |  |  |  |
| * Shared decision making | AGILE, BOA (end. BHS), NCD, SCM7 | Yes | Yes | No | Yes | **Yes** |
| * Information | BESS, SCMs, VA | Yes | Yes | Yes | Partial: QS15 | **Yes** |
| **Anaesthesia, tranexamic acid and VTE prophylaxis** |  |  |  |  |  |  |
| * Choice of anaesthesia | SCM7 | Yes | Yes | Yes | No | **Yes** |
| * Tranexamic acid | SCM1 | Yes | Yes | Yes | No | **Yes** |
| * VTE (DVT) prophylaxis | NE | Yes | No | Yes | No | **No** |
| **Surgery** |  |  |  |  |  |  |
| * Implant (prosthesis) errors | BOA (end. BHS), SCM7 | Yes | Yes | Yes | No | **Yes** |
| * Bone Cement Implantation Syndrome | NHSE&I PS | Yes | Yes | Yes | No | **Yes** |
| * Choice between PKR and TKR | SCMs, ZB | Yes | Yes | Yes | No | **Yes** |
| * Patella resurfacing (TKR) | SCM1 | Yes | Yes | Yes | No | **Yes** |
| **Postoperative rehabilitation and long-term care** |  |  |  |  |  |  |
| * Inpatient rehabilitation | AGILE, BESS BOA (end. BHS), NCD, NE, SCMs | Yes | Yes | Yes | No | **Yes** |
| * Post-discharge rehabilitation | AGILE, BMS, BOA (end. BHS), NCD, NE, SCMs, VA | Yes | Yes | Yes | No | **Yes** |
| * Long-term care | BMS, NE, SCM4 | Yes | No | No | No | **No** |
| **Additional areas** |  |  |  |  |  |  |
| * Audits and registries | BESS, BOA (end BHS), NJR, SCM6 | No | Yes | N/A | No | **No** |
| * Implants | NJR | No | Yes | N/A | TA304 | **No** |
| * New guidance | ACPA, BMS, CH, NHSE&I PS | No | Yes | N/A | No | **No** |
| * Referral for joint surgery | CH, VA | No | No | N/A | Yes (QS87) | **No** |

Abbreviations:

* ACPA, Arthroplasty Care Practitioners’ Association
* AGILE (special interest group representing physiotherapists working with older people), affiliated to the Chartered Society of Physiotherapy
* BESS, British Elbow & Shoulder Society
* BMS, Bristol Medical School (Musculoskeletal Research Unit, Translational Health Sciences)
* BOA (end. BHS), British Orthopaedic Association (response endorsed by the British Hip Society)
* CH, Connect Health
* NCD, The National Clinical Director for Musculoskeletal Conditions NHS England and Improvement
* NE, NeuroCare Europe
* NHSE&I PS, NHS England and Improvement – patient safety division
* NJR, National Joint Registry
* RCN, Royal College of Nursing
* SCM, Specialist Committee Member
* VA, Versus Arthritis
* ZB, Zimmer Biomet

1. Suggested improvement areas

Section 4 presents a summary of the suggested improvement areas, with provisional recommendations that may support statement development and information on current UK practice.

* 1. Self-management and preoperative care

### Self-management

Stakeholders suggested that self-management was important for people awaiting joint replacement surgery, particularly in the context of increased waiting times due to the COVID-19 pandemic. Stakeholders highlighted the following elements:

* Managing pain and other symptoms of arthritis.
* Access to physical activity and exercise programmes.
* Advice from healthcare professionals on managing pain and fatigue.
* Supporting mental health.

Stakeholders proposed that effective support for self-management could be delivered by healthcare professionals working within primary care, such as First Contact Practitioners (FCPs).

#### Selected recommendations

Statements in existing quality standards

[NICE’s quality standard on osteoarthritis (QS87)](https://www.nice.org.uk/guidance/qs87/):

Statement 3. Adults with osteoarthritis participate in developing a self‑management plan that directs them to any support they may need.

Statement 4. Adults with osteoarthritis are advised to participate in muscle strengthening and aerobic exercise.

#### Current UK practice

[Versus Arthritis’s response to the Health Foundation’s COVID-19 Impact Enquiry (2020)](https://www.health.org.uk/what-we-do/a-healthier-uk-population/mobilising-action-for-healthy-lives/covid-19-impact-inquiry) cited the findings of their Joint Replacement COVID-19 Impact Survey (October and November 2020). Of 688 people in England waiting for joint replacement surgery who responded, it was reported that:

* 90% reported reduced mobility.
* 89% reported that their pain levels had deteriorated.
* 79% reported that they were less independent.
* 72% reported that their mental health had deteriorated.
* 14% had been offered access to a physiotherapist while waiting for surgery.

Versus Arthritis’s [Impossible to Ignore campaign](https://www.versusarthritis.org/news/2021/june/we-are-calling-for-more-support-for-those-waiting-for-joint-replacement-surgery/) also refers to all but the last of these findings in a survey of 900 people across the UK about their experience of waiting for surgery (2021).

### Preoperative care

Stakeholders felt that this is an important area for quality improvement, suggesting a range of specific areas:

* Holistic, multidisciplinary approach to preoperative/preadmission assessment.
* Identifying people who need supervised rehabilitation and home adaptations to support proactive planning (especially people identified as being frail) as part of an assessment.
* Holistic, multidisciplinary approach to preoperative rehabilitation, encompassing education and preparation for surgery.
* Optimising physical fitness to improve recovery and maximise postoperative function. Exercises and attention to muscle condition were highlighted as specific areas important to aiding recovery.
* The timing of access to rehabilitation was highlighted as an important consideration, particularly in the context of long waiting lists.
* Musculoskeletal FCPs (physiotherapists with enhanced skills) could provide rehabilitation preoperatively.
* Variation in the format and content of assessment and rehabilitation (an example being hip precautions – the provision of advice and equipment to reduce the risk of dislocation after THR), and the healthcare professionals involved.

#### Selected recommendations

[NICE’s guideline on joint replacement (primary) NG157](https://www.nice.org.uk/guidance/ng157):

1.2.1 Give people having hip or knee replacement advice on preoperative rehabilitation. Include advice on:

* exercises to do before and after surgery that will aid recovery
* lifestyle, including weight management, diet and smoking cessation (see [NICE's guidance on lifestyle and wellbeing](https://www.nice.org.uk/guidance/lifestyle-and-wellbeing))
* maximising functional independence and quality of life before and after surgery.

[Royal College of Occupational Therapists’ (RCOT) guideline on occupational therapy for people undergoing total hip replacement (NICE-accredited, 2017)](https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines/hip):

1 It is recommended that the occupational therapy assessment is comprehensive and considers factors which may affect individual needs, goals, recovery and rehabilitation, including co-morbidities, trauma history, personal circumstances, obesity and pre-operative function.

5 It is recommended that cognitive status is taken into account during pre-operative and post-operative intervention due to its potential for impact on recovery.

6 It is recommended that service users are fully involved in decisions about the equipment required to enable them to carry out daily living activities and to comply with any hip precautions in their home environment post-surgery.

11 It is recommended that pre-operative assessment and education is carried out in the most appropriate environment for the service user. For the majority of service users a clinic environment is appropriate, but where needs are complex, a home assessment should be an available option.

14 It is suggested that occupational therapists should contribute to standardised pre-operative education interventions, providing information, advice and demonstrations where relevant (e.g. of joint protection principles, equipment).

22 It is recommended that occupational therapists advise service users, where protocol includes precautions, on appropriate position behaviours for those daily activities applicable to the individual’s needs, ranging from getting in/out of a car to answering the telephone.

23 It is suggested that given the increase in evidence of improved service user satisfaction and earlier functional independence, without adverse effects on dislocation rates when hip precautions are relaxed or discontinued, occupational therapists engage in local discussion/review of hip precaution protocols with their surgical and multidisciplinary teams.

24 It is recommended that occupational therapists optimise length of stay, with due reference to care pathways and enhanced recovery programme guidance.

#### Current UK practice

[GIRFT 2020](https://www.gettingitrightfirsttime.co.uk/girft-reports/):

41% of trusts reviewed reported that all TKR patients had preoperative care that included education, a postoperative protocol, identifying patients at risk of poor functional outcome and organisation of rehabilitation equipment at home.

Analysis of variation between the content of Enhanced Recovery Programmes (ERPs) at 22 UK NHS hospitals performing THR and 23 performing TKR, together with an audit of compliance (15 patients aged 18 and over having an operation on a single joint) using data provided by 16 (THR) and 18 (TKR) was conducted October 2014 to April 2015 and reported by [Nagra et al (2017)](https://publishing.rcseng.ac.uk/doi/pdf/10.1308/rcsann.2017.0124). Note: The aim of enhanced recovery programmes (ERP) or enhanced recovery after surgery (ERAS) is for patients to return to their baseline function as quickly as possible and to reduce the incidence of postoperative complications.

The study looked at different elements of the ERPs. Key findings include:

THR ERPs:

* 90% of centres offered patient education; where it was offered there was 81% adherence to the ERP. Further:
  + It was delivered in person at all centres.
  + Patient education was supported by written material in 2 centres.

TKR ERPs:

* 76% of centres offered patient education; where it was offered there was adherence of 90% to the ERP. Further:
  + There was wide variation in the delivery, ranging from simple written advice (booklets) to ‘joint schools’ (run by multidisciplinary teams consisting of physiotherapists, occupational therapists, pain specialist nurses and anaesthetists)
  + Joint schools were offered in 2 centres.
  + Patient education was delivered by a surgeon on 38% of occasions.

Limitations of the study identified were that the high degree of variation among ERP elements, despite a sample size of 510, did not permit regression analysis, and that length of stay was used as a surrogate measure of enhanced recovery. Readmissions, and long-term morbidity or mortality were not considered.

170 UK-based physiotherapists and occupational therapists (174 Trusts) who treat patients before and/or after THR responded to a survey, the findings of which were published in 2016 ([Smith and Sackley](https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-016-1092-x)). Findings concerned attitudes towards the provision of equipment (for example, raised toilet seats) and advice (for example, to avoid certain movements or activities such as driving) to help reduce the risk of dislocation. The study reported that:

* 97% of respondents routinely provided advice on hip precautions.
* 87% of trusts routinely provided equipment.
* 61% reported that they advised people about hip precautions preoperatively, and 52% in a group setting
* 2% reported they did not routinely provide equipment to people with cognitive impairment, but 6% stated that they did.

### Resource impact

We do not expect this quality statement to have a significant impact on resources.

### Issues for consideration

**For discussion:**

* No recommendations on self-management while awaiting surgery; self-management is covered by other quality standards.
* No recommendations on preoperative care for shoulder replacement.
* RCOT recommendation for OT involvement in assessment only covers THR.
* Only a research recommendation in NG157 on delivering an earlier, fuller, individualised rehabilitation programme.
* What is the key action that will lead to improvement?
* Can we develop a specific, measurable statement?

**For decision:**

* Should this area be prioritised for inclusion in the quality standard?
  1. Shared decision making and information

### Shared decision making

Stakeholders felt that discussing the risks, benefits and outcomes of surgery were important components of supporting patients to make an informed decision to have joint replacement surgery. Managing expectations of surgery and recovery was also highlighted as important. Stakeholders commented that using a decision aid was an important part of the process.

Stakeholders felt that goal setting is important in supporting preoperative and postoperative rehabilitation. They suggested that allied health professionals would be able to support this aspect of care particularly effectively.

#### Selected recommendations

[NICE’s guideline on joint replacement (primary) (NG157) - excerpt](https://www.nice.org.uk/guidance/NG157):

1.1.2 Support shared decision making by discussing treatment options with people offered primary elective hip, knee or shoulder replacement and their families or carers (as appropriate). Include in the discussions:

* the potential benefits and risks of the available procedures and types of implant for joint replacement, including the possible need for more surgery in the future.

[RCOTs’ guideline on occupational therapy for people undergoing total hip replacement (NICE-accredited, 2017):](https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines/hip)

2 It is recommended that goal setting is individualised, enhances realistic expectations of functional independence, and commences at pre-operative assessment.

18 It is recommended that occupational therapists encourage early discussion and goal setting for community reintegration.

#### Current UK practice

[GIRFT 2020:](https://www.gettingitrightfirsttime.co.uk/girft-reports/)

Around 38% of trusts reviewed reported that all TKR patients had a multi-disciplinary assessment preoperatively to determine achievable goals of rehabilitation.

### Information

Stakeholders proposed provision of consistent, standardised information that directly addressed patients’ expectations and concerns about surgery, recovery and rehabilitation as a quality improvement area.

Stakeholders also suggested:

* Regular communication about the likely date of surgery, and timely access to a point of contact for queries.
* Informing patients of independent providers if their surgery is delayed.

#### Selected recommendations

[NICE’s guideline on joint replacement (primary) NG157](https://www.nice.org.uk/guidance/NG157):

1.1.4 Give information on primary elective hip, knee or shoulder replacement that includes:

* what to expect before, during and after surgery, including length of hospital stay, recovery and rehabilitation
* who to contact if they have questions or concerns before or after surgery
* preparing for surgery, including steps they can take to optimise their recovery (see the section on [preoperative rehabilitation](https://www.nice.org.uk/guidance/ng157/chapter/recommendations#preoperative-rehabilitation))
* pain after surgery and how it can be managed
* returning to work
* returning to usual activities, for example playing sports, driving and sexual activity.

[NICE’s guideline on shared decision making NG197](https://www.nice.org.uk/guidance/NG197) (extract):

1.2.4 When providing information and resources:

* only use reliable, high-quality sources such as NICE-accredited information, links to the [NHS website](https://www.nhs.uk/), information from appropriate patient organisations, or relevant [NICE guidelines](https://www.nice.org.uk/about/what-we-do/our-programmes/nice-guidance/nice-guidelines/making-decisions-using-nice-guidelines) …
* take into account accessibility and the requirement to meet the [NHS Accessible Information Standard.](https://www.england.nhs.uk/ourwork/accessibleinfo/)

[RCOTs’ guideline on occupational therapy for people undergoing total hip replacement (NICE-accredited, 2017):](https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines/hip)

3 It is recommended that occupational therapists ensure that they provide clear communication and advice that is consistent with that of other members of the multidisciplinary team.

7 It is recommended that service users are given advice on effective pain management strategies, to decrease pre-operative pain experience and sleep disturbance, and enhance post-operative physical function.

**Current UK practice**

[Versus Arthritis’s response to the Health Foundation’s COVID-19 Impact Enquiry (2020)](https://www.health.org.uk/what-we-do/a-healthier-uk-population/mobilising-action-for-healthy-lives/covid-19-impact-inquiry) cited the findings of their Joint Replacement COVID-19 Impact Survey (October and November 2020). Of 688 people in England waiting for joint replacement surgery who responded, 72% reported that they had not been informed of their likely surgery date or an estimated waiting time for receiving treatment.

### Resource impact

We do not expect this quality statement to have a significant impact on resources.

### Issues for consideration

**For discussion:**

* Potential overlap with the patient experience quality standard (QS15).
* There is only a research recommendation in NG157 on decision aids.
* What is the priority for improvement?
* There is limited current practice, and measurability may be an issue.

**For decision:**

* Should this area be prioritised for inclusion in the quality standard?
  1. Anaesthesia, tranexamic acid and VTE prophylaxis

### Choice of anaesthesia

Stakeholders suggested that offering patients a choice of anaesthesia for THR or knee replacement is important because optimising anaesthesia helps to support early recovery and improve patient experience. Reducing nausea and pain were also highlighted as important considerations.

#### Selected recommendations

[NICE’s guideline on joint replacement (primary) NG157](https://www.nice.org.uk/guidance/ng157/) - excerpts:

1.3.1 Offer people having primary elective hip replacement a choice of:

* regional anaesthesia in combination with local infiltration analgesia (LIA) **or**
* general anaesthesia in combination with LIA.

1.3.2 Offer people having primary elective knee replacement a choice of:

* regional anaesthesia in combination with LIA **or**
* general anaesthesia in combination with LIA.

#### Current UK practice

Analysis of variation between the content of Enhanced Recovery Programmes (ERPs) at 22 UK NHS hospitals performing THR and 23 performing TKR, together with an audit of compliance (15 patients aged 18 and over having an operation on a single joint) using data provided by 16 (THR) and 18 (TKR) was conducted October 2014 to April 2015 and reported by [Nagra et al (2017)](https://publishing.rcseng.ac.uk/doi/pdf/10.1308/rcsann.2017.0124):

* THR (of the centres which provided anaesthetic advice):
  + 73% offered local wound anaesthetic, and 89% adhered to this.
  + Anaesthetic type was specified in 14 ERPs. Spinal or epidural anaesthesia (with or without sedation) was recommended in 12 ERPs.
  + General anaesthesia was recommended in 2 ERPs.
* TKR (of the centres which provided anaesthetic advice):
  + 50% offered local wound anaesthetic, and 78% adhered to this.
  + 9 recommended spinal anaesthetic, with some specifying anaesthetic agents.
  + Alternatives included combinations of general and spinal anaesthetics, and use of short acting anaesthetics, with 2 suggesting intravenous propofol.

This audit also highlighted (but less detailed analysis is provided), that in terms of intraoperative analgesia, local anaesthetics were administered periarticularly during surgery. 10 centres recommended local anaesthetics.

### Tranexamic acid

Stakeholders suggested that adding topical tranexamic acid (TXA) to intravenous or oral TXA for hip and knee joint replacements is important, commending that it reduces blood loss and the need for blood transfusion after surgery. It was suggested however that variation in practice may remain due to uncertainty as to the timing, method of delivery and dosing.

#### Selected recommendations

[NICE’s guideline on joint replacement (primary) (NG157) (excerpt):](https://www.nice.org.uk/guidance/ng157/)

1.4.1 For primary elective hip or knee replacement:

* Give intravenous tranexamic acid.
* If there is no renal impairment, also apply 1 g to 2 g of topical (intra-articular) tranexamic acid diluted in saline after the final wash-out and before wound closure. Ensure that the total combined dose of tranexamic acid does not exceed 3 g.
* If there is renal impairment, give a reduced dose of intravenous tranexamic acid on its own.

#### Current UK practice

As reported by [Nagra et al (2017):](https://publishing.rcseng.ac.uk/doi/pdf/10.1308/rcsann.2017.0124)

* 77% of centres offering THR (82% adhered to the ERP where tranexamic acid was offered, at doses varying from 1g/kg to 2g/kg) in 17 centres.
* 67% of centres offering TKR (73% adhered to the ERP where tranexamic acid was offered), at doses varying from 15mg/kg to 1g/kg for most of 13 centres.

### VTE (DVT) prophylaxis

Stakeholders suggested using neuromuscular electrical simulation (NEMS) devices during and after surgery, suggesting that they are more effective than using either an intermittent compression device (ICD) alone, or an ICD with low molecular weight heparin (LMWH). They also commented that using an ICD in combination with LMWH may increase the risk of bleeding. It was suggested that NEMS would also stimulate muscle activity during treatment, which provided a further benefit.

#### Selected recommendations

No recommendations identified.

#### Current UK practice

[NJR online reports](https://reports.njrcentre.org.uk/) provide annual data on thromboprophylaxis regimes prescribed at the time of the operation. Data for 2018 to 2020 does not mention NEMS devices. ‘Other mechanical’ is specified for a small proportion of operations performed in 2019 for primary THR, TKR or shoulder replacements (7%, 5% and 3% respectively). In 2020, 1% of operations were recorded as using ‘other mechanical’ as a means of thromboprophylaxis for each joint. A form of thromboprophylaxis which is ‘neither mechanical nor chemical’ is reported for no more than 1% of primary procedures 2018 to 2020, for any of these joints.

### Resource impact

We do not expect this quality statement to have a significant impact on resources.

### Issues for consideration

**For discussion:**

* There are no recommendations for using NEMS for VTE prophylaxis.
* Suggestions supported by recommendations are only relevant to hip and knee replacements.
* What is the key action that will lead to improvement?
* Can we develop a specific, measurable statement?

**For decision:**

* Should this area be prioritised for inclusion in the quality standard?
  1. Surgery

### Implant (prosthesis) errors

Stakeholders suggested that preventing the wrong implant (prosthesis) being inserted during surgery is a quality improvement area. They highlighted that 2 pause moments should be used to prevent this. They highlighted that inserting incorrect implants is a ‘Never Event’.

#### Selected recommendations

[NICE’s guideline on joint replacement (primary) (NG157):](https://www.nice.org.uk/guidance/ng157/)

1.6.1 Use 2 intraoperative 'stop moments', 1 before implantation and 1 before wound closure, to check all implant details and ensure compatibility of each component.

#### Current UK practice

[Between 1 April 2019 and 31 March 2020](https://www.england.nhs.uk/patient-safety/never-events-data/) there were 472 Never Events. Of the Never Events recorded overall, 10 related to hip surgery, 13 to knee surgery and 1 to shoulder surgery.

[An independent report by the Healthcare Safety Investigation Branch published in 2018](https://www.hsib.org.uk/investigations-and-reports/implantation-of-wrong-prostheses-during-joint-replacement-surgery/) carried out a national investigation into prosthesis errors in hip surgery. The report also highlighted that:

* the number of Never Events involving hip and knee prostheses averaged 21 per year between 1 April 2012 and 31 March 2017.

NJR data (records) from 2003 to 2017 was reviewed. The review identified that prosthesis errors occurred in 3.5 per 10,000 cases (0.035%) of hip replacements and 3.8 per 10,000 cases (0.038%) of knee replacements.

### Bone Cement Implantation Syndrome

Stakeholders suggested that preventing Bone Cement Implant Syndrome (BCIS), a condition causing death or serious harm during joint replacement, is an important area. It was suggested that the risk should be discussed when obtaining patient consent for surgery and anaesthesia. They also suggested implementing the ‘Coventry Curfew’ can help prevent and, should it occur, manage this medical emergency. The following summary is derived from [Anaesthesia News October 2014](https://anaesthetists.org/Portals/0/PDFs/_Anaesthesia%20News%20PDFs%20compressed/2014/Anaesthesia_News_October_2014-min.pdf?ver=2018-12-11-104647-947)):

* Identifying patients needing increased monitoring at the Team Brief.
* Assigning roles to theatre team members at the end of ‘time out’.
* ‘Cement Curfew’:
  + Monitoring (led by the lead anaesthetist) to ensure good cardiac output before the cement is inserted and increased measurement of blood pressure to at least every 2.5 minutes if not using invasive monitoring.
  + Cement is inserted using a ‘third generation’ technique, usually without pressurisation.
  + Lead surgeon informs the team when the prosthesis is being inserted and when the hip is relocated.
  + The anaesthetist declares the end of the curfew.
* If there is evidence of BCIS, the anaesthetist informs the team, checks for cardiovascular collapse and the team perform their assigned roles if collapse has occurred.
* Once over, the patient is returned to the lateral position (if possible) and the hip is closed.

#### Selected recommendations

[NICE’s guideline on perioperative care in adults (NG180):](https://www.nice.org.uk/guidance/ng180)

1.3.1 Use a validated risk stratification tool to supplement clinical assessment when planning surgery, including dental surgery. Discuss the person's risks and surgical options with them to allow for informed shared decision making.

1.4.9 Consider adding steps to the WHO surgical safety checklist to eliminate preventable events reported locally or nationally, such as those in NHS Improvement's national patient safety alerts and surgical 'never events'. Follow the [WHO surgical safety checklist implementation manual](https://www.who.int/patientsafety/safesurgery/checklist_implementation/en/) when adding steps to the checklist.

[Royal College of Anaesthetists’ (NICE-accredited, 2021) Guidelines for the provision of anaesthesia services for trauma and orthopaedic surgery](https://www.rcoa.ac.uk/gpas/chapter-16):

Chapter 6, Hip fracture 5.2.5

Agreed local guidelines should be in place and implemented on the following:

* compliance with best practice anaesthetic management protocols for hip fracture as recommended by the Association of Anaesthetists
* tailored World Health Organization (WHO) safety checklists to identify the potential for adverse events associated with the requirement for use of bone cement should be used during team briefing and at time out
* preoperative assessment fitness criteria for hip fracture surgery and review of ‘do not attempt cardiopulmonary resuscitation’ (DNACPR) status.

#### Current UK practice

Please see Appendix 1 comment 24.

### Choice between PKR and TKR

Offering a choice between these procedures to adults with isolated medial compartmental osteoarthritis was highlighted as important. Stakeholders commented that a PKR is associated with improved outcomes. Onward referral to another surgeon within a trust, or between Trust networks, if it is decided that PKR is the preferred approach and improving the communication pathway between surgical teams were felt to be important supporting mechanisms.

#### Selected recommendations

[NICE’s guideline on joint replacement (primary) (NG157):](https://www.nice.org.uk/guidance/ng157/)

1.7.1 Offer a choice of partial or total knee replacement to people with isolated medial compartmental osteoarthritis. Discuss the potential benefits and risks of each option with the person.

#### Current UK practice

[A 2019 study published in the BMJ](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6383371/) (Wilson et al) suggested that between 25% and 47% of people in the UK eligible for primary joint replacement (knee) were estimated to have isolated unicompartmental osteoarthritis and would be eligible to receive either a TKR or a PKR.

[A 2018 study using data from the NJR (England and Wales) published in the BMJ](https://bmjopen.bmj.com/node/135805.full) (Burn et al) suggested that up to 50% of people with end-stage symptomatic osteoarthritis of the knee could be eligible for this procedure. The study suggested that reducing variation in practice among low- or no-volume PKR surgeons would increase the proportion of PKRs offered overall.

A key limitation of the study is that it was not possible to include preoperative radiographs, which would have enabled better assessment of patients eligible for either procedure.

[NJR Reports](https://reports.njrcentre.org.uk/) from the last 3 years show that the proportion of PKRs (unicompartmental or unicondylar) has increased by 1% each year between 2018 and 2020 in NHS hospitals:

2020: 11% (of 25,956 primary knee procedures)  
2019: 10% (of 62,407)  
2018: 9% (of 59,712)

There was a more marked increase, year-on-year 2018 to 2020, in the proportion carried out in independent sector treatment centres (10%, 13% and 16%) during the same period, which may include those for NHS-funded patients. The proportion carried out in independent hospitals increased by 1% in 2020 from 2018 and 2019, to 15%, which may include operations for NHS-funded patients.

[GIRFT 2020](https://www.gettingitrightfirsttime.co.uk/girft-reports/) highlighted that the [2015 report (BOA](https://www.gettingitrightfirsttime.co.uk/girft-reports/)) recommended that surgeons should carry out 20 PKR (unicondylar) procedures per year. By the time of the follow-up 2020 report being published, this had been reduced to 10.

* [GIRFT 2020](https://www.gettingitrightfirsttime.co.uk/girft-reports/) highlights that NJR data for 2018 showed that 62.3% of surgeons carried out 10 or fewer PKRs; in 2012, 76.4% did.
* [NJR 2021](https://www.njrcentre.org.uk/njrcentre/Reports-Publications-and-Minutes/Annual-reports) highlights that the median number of such cases performed over the past 3 years is 19 (per surgeon) or 49 per unit, although it must be noted that 2020 data is affected by the impact of COVID-19. It is highlighted that over recent years prior to 2020, virtually no procedures were carried out by surgeons performing fewer than 7 total knee replacements (TKRs) per year.

### Patella resurfacing (TKR)

Stakeholders suggested that increasing the practice of patella resurfacing is a quality improvement area, commenting that adopting the technique could reduce the need for revision procedures.

**Selected recommendations**

[NICE’s guideline on joint replacement (primary) (NG157):](https://www.nice.org.uk/guidance/NG157)

1.7.2 Offer resurfacing of the patella to people having primary elective total knee replacement.

**Current UK practice**

[A national survey of members of the British Association for Surgery of the Knee (BASK)](https://doi.org/10.1016/j.knee.2020.11.014) (Matharu et al, 2021) was completed by 309 practising knee surgeons (around 90% of whom were consultants) working across 288 UK hospitals on patellar resurfacing practices for TKRs. The survey was carried out between August and October 2020. The article highlighted the recommendation on routine resurfacing of the patella in [NICE NG157](https://www.nice.org.uk/guidance/NG157). Findings included:

* 24% of surgeons never performed patellar resurfacing.
* 37% always did.
* 39% did so selectively, of whom 71% performed patella resurfacing in less than 50% of TKRs.
* The risk of needing future revision to resurface a previously unresurfaced patella was rated as important by 43%.
* The risk of needing future revision due to patellar component loosening or failure was only rated as important by 11%.
* 61% cited the condition of patella articular cartilage at surgery as the most common factor in deciding to perform resurfacing.

This article also highlighted that the rate of patellar resurfacing is steadily increasing, citing data from the NJR, which shows that in 2011, 36% of primary TKRs had a patella resurfacing; in 2019, this had increased to 43% of TKRs. [NJR Reports](https://reports.njrcentre.org.uk/) show that in 2020, 49% of primary TKRs had patella resurfacing.

[GIRFT 2020](https://www.gettingitrightfirsttime.co.uk/girft-reports/) highlights that the proportion of elective knee revision surgeries carried out (of all knee replacement surgeries) has fallen from around 7% in 2013/14 to a little more than 6% in 2018/19. The decline has been less pronounced than the reduction in the proportion of elective hip revision surgeries for THR (11% to a little more than 8% during the same timeframe).

**Resource impact**

The resource impact report supporting NG157 estimates that currently around 72% of people eligible for a partial knee replacement have a total knee replacement with or without patella resurfacing. It is expected when the guideline is fully implemented around 70% of people eligible for partial knee replacements will have one. As a result of this change it is expected that savings of around £4.2 million will be made by the NHS in England.

The resource impact report that supports NG157 estimates that following full implementation of the recommendations on total knee replacements with patella resurfacing (recommendation 1.7.2) there will be an increase in costs of around £500,000 per year. This should lead to reduced revision rate which will offset this additional cost.

**Issues for consideration**

**For discussion:**

* What is the improvement area: implant errors, BCIS, choice between TKR or PKR, or patella resurfacing?
* Consider recommendation and recommendation on hip fracture only to support a statement on BCIS.
* Resource impact of knee surgery suggestions.
* What is the key action that will lead to improvement?

**For decision:**

Should this area be prioritised for inclusion in the quality standard?

* 1. Postoperative rehabilitation and long-term care

**Inpatient rehabilitation**

Stakeholders felt that inpatient rehabilitation is an important area because it helps to optimise the benefits of surgery and support early recovery. They highlighted:

* Multidisciplinary input and holistic approach.
* Early advice and guidance (within 24 hours of surgery) to support earlier discharge.
* Early mobilisation (within 24 hours of surgery) to optimise outcomes and reduce the risk of complications associated with immobility.

Variation in access to rehabilitation due to lack of physiotherapy resources over the weekend for people having their operation on a Friday and being diverted from elective patients were highlighted as barriers to implementation.

Stakeholders also suggested that identifying people with frailty, functional impairment or cognitive impairment who need supervised inpatient rehabilitation prior to discharge is important. Goal setting was highlighted as an aspect of this process.

**Selected recommendations**

[NICE’s guideline on joint replacement (primary) NG157](https://www.nice.org.uk/guidance/ng157/):

1.10.1 A physiotherapist or occupational therapist should offer rehabilitation, on the day of surgery if possible and no more than 24 hours after surgery, to people who have had a primary elective hip, knee or shoulder replacement. Rehabilitation should include:

* advice on managing activities of daily living **and**
* home exercise programmes **and**
* mobilisation for people who have had knee or hip replacement **or**
* ambulation for people who have had shoulder replacement.

[Royal College of Occupational Therapists’ (RCOT) guideline on occupational therapy for people undergoing total hip replacement (NICE-accredited, 2017):](https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines/hip)

1 It is recommended that the occupational therapy assessment is comprehensive and considers factors which may affect individual needs, goals, recovery and rehabilitation, including co-morbidities, trauma history, personal circumstances, obesity and pre-operative function.

2 It is recommended that goal setting is individualised, enhances realistic expectations of functional independence, and commences at pre-operative assessment.

5 It is recommended that cognitive status is taken into account during pre-operative and post-operative intervention due to its potential for impact on recovery.

24 It is recommended that occupational therapists optimise length of stay, with due reference to care pathways and enhanced recovery programme guidance.

25 It is recommended that the occupational therapist is involved in early multidisciplinary post-operative intervention for service users following hip replacement, providing either inpatient or home-based rehabilitation

#### Current UK practice

[GIRFT (2020)](https://www.gettingitrightfirsttime.co.uk/orthopaedics-follow-up/) reported that:

* 23.8% of trusts reviewed reported that rehabilitation services are resourced and designed to deliver 7-day services.

Analysis of variation between the content of Enhanced Recovery Programmes (ERPs) at 22 UK NHS hospitals performing THR and 23 performing TKR, together with an audit of compliance (15 patients aged 18 and over having an operation on a single joint) using data provided by 16 (THR) and 18 (TKR) was conducted October 2014 to April 2015 and reported by [Nagra et al (2017)](https://publishing.rcseng.ac.uk/doi/pdf/10.1308/rcsann.2017.0124):

* 82% of 16 centres recommended early mobilisation and physiotherapy for THR (51% adhered to local guidelines when it was offered).
* 76% of 18 centres recommended early mobilisation and physiotherapy for TKR (47% adhered to local guidelines when it was offered).

Nagra et al also highlighted that some plans stated that patients should be mobilised within 2 or 4 hours of the operation (but only if blood pressure was within 10% of preoperative value), while others recommended exercise in bed on day 0.

The [Perioperative Quality Improvement Programme’s 2018-2019 annual report](https://www.rcoa.ac.uk/research/research-projects/perioperative-quality-improvement-programme-pqip#:~:text=PQIP%20releases%20a%20range%20of%20reports%20on%20the,their%20results%20along%20with%20quarterly%20and%20annual%20reports.) highlighted that the national target for mobilisation within 24 hours of surgery is 85%. The report is based on data relating to around 18,500 patients in England and Wales. The report highlighted that the target was exceeded by the following specialties: colorectal, urology, upper GI, thoracis and burns & plastics. For orthopaedics and head and neck specialties, no hospitals exceeded this target.

### Post-discharge rehabilitation

Stakeholders felt that outpatient rehabilitation, including planning for discharge, is an important area because it helps to maintain the benefits of surgery. Stakeholders highlighted the following areas:

* Multidisciplinary, personalised, holistic care.
* Timely identification (prior to discharge) of people needing referral to outpatient or community physiotherapy; goal setting was highlighted as an aspect of this process. People with frailty or cognitive impairment were identified as important groups to focus on.
* Timely provision of post-discharge rehabilitation.
* Access, especially in the context of increased pressure on services and impact on outcomes.
* Support (including materials) for self-directed rehabilitation.
* Improving long-term function, pain and mitigating long-term complications.
* Variability of practice regarding for how long patients are advised to maintain hip precautions after THR.
* Continuity of care.

#### Selected recommendations

[NICE’s guideline on joint replacement (primary) NG157](https://www.nice.org.uk/guidance/ng157/):

1.10.2 For people who have had primary elective hip or knee replacement:

* a member of the physiotherapy or occupational therapy team should give advice on self-directed rehabilitation
* the advice should be given before the person leaves hospital
* the advice should be adjusted in line with recommendations 1.10.5 and 1.10.6 if needed.

1.10.3 For people who have had primary elective shoulder replacement:

* a member of the physiotherapy or occupational therapy team should give advice on:
  + self-directed rehabilitation **or**
  + supervised group rehabilitation **or**
  + individual rehabilitation
* the advice should be given before the person leaves hospital
* the advice should be adjusted in line with recommendations 1.10.5 and 1.10.6 if needed.

1.10.4 Ensure that people who are undertaking self-directed rehabilitation have:

* a clear understanding of their rehabilitation goals and the importance of doing the exercises prescribed to achieve these goals
* a point of contact for advice and support.

1.10.5 Offer supervised or group individual outpatient rehabilitation to people who:

* have difficulties managing activities of daily living **or**
* have ongoing functional impairment leading to specific rehabilitation needs **or**
* find that self-directed rehabilitation is not meeting their rehabilitation goals.

1.10.6 Consider supervised group or individual outpatient rehabilitation for people with cognitive impairment.

[RCOTs’ guideline on occupational therapy for people undergoing total hip replacement (NICE-accredited, 2017):](https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines/hip)

1 It is recommended that the occupational therapy assessment is comprehensive and considers factors which may affect individual needs, goals, recovery and rehabilitation, including co-morbidities, trauma history, personal circumstances, obesity and pre-operative function.

2 It is recommended that goal setting is individualised, enhances realistic expectations of functional independence, and commences at pre-operative assessment.

5 It is recommended that cognitive status is taken into account during pre-operative and post-operative intervention due to its potential for impact on recovery.

6 It is recommended that service users are fully involved in decisions about the equipment required to enable them to carry out daily living activities and to comply with any hip precautions in their home environment post-surgery.

20 It is suggested that where specific needs are identified, the occupational therapist refers the service user on to community rehabilitation, reablement or intermediate care services to enhance community reintegration.

21 It is recommended that occupational therapists consult with the surgical team regarding any specific precautions to be followed post-operatively.

22 It is recommended that occupational therapists advise service users, where protocol includes precautions, on appropriate position behaviours for those daily activities applicable to the individual’s needs, ranging from getting in/out of a car to answering the telephone.  
23 It is suggested that given the increase in evidence of improved service user satisfaction and earlier functional independence, without adverse effects on dislocation rates when hip precautions are relaxed or discontinued, occupational therapists engage in local discussion/review of hip precaution protocols with their surgical and multidisciplinary teams.

25 It is recommended that the occupational therapist is involved in early multidisciplinary post-operative intervention for service users following hip replacement, providing either inpatient or home-based rehabilitation.

**Current UK practice**

[GIRFT (2020)](https://www.gettingitrightfirsttime.co.uk/orthopaedics-follow-up/) reported that

* 32.8% of trusts reviewed have reported that as routine practice, all TKR patients should have follow-up with a specialist physiotherapist within 3 weeks after being discharged from hospital to assess postoperative progress.

A study published in 2020 ([Smith et al](https://linkinghub.elsevier.com/retrieve/pii/S0031-9406(19)30125-7)) investigated demographic and geographical variability in physiotherapy provision following hip and knee replacement using sources that include NJR data from 2009-2010 and completed PROMs questionnaires at baseline and 12 months postoperatively. 17,338 people (THR) and 20,260 people (TKR) were included in the analysis. The study highlighted:

* People having THR are less likely to receive physiotherapy in the first postoperative year.
* There was substantial variation in the provision of physiotherapy across England (mapped to SHA areas):
  + between 40% (south west) and 73% (London) received at least 1 session (THA).
  + between 74% (south west) and 87% (north east) of patients received at least 1 session (TKR).
* A greater proportion of younger people and females received more physiotherapy.
* A greater proportion of non-white people received at least 1 session than white people (64% compared to 36%).
* While a greater proportion of people with higher levels of perceived disability are more likely to have physiotherapy after either THR or TKR, significant variation of provision cannot be explained in terms of demographics or perceived severity of postoperative impairment.

Limitations of the study include missing data for both procedures, small differences between groups taking on undue significance, and dependence on patient recall of their physiotherapy sessions.

170 UK-based physiotherapists and occupational therapists (174 Trusts) who treat patients before and/or after THR responded to a survey, the findings of which were published in 2016 ([Smith and Sackley](https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-016-1092-x)). The findings highlight variation in practice around hip precautions: 49% of trusts recommended that equipment should be used for 6 weeks, while 40% recommended that patients use it for 3 months, and some (13), indefinitely.

The paper also highlighted that at the time of publication, UK occupational therapists and physiotherapists questioned whether hip precautions should be routinely offered. As highlighted at engagement, other studies have suggested that hip precautions may not be routinely needed following a THR. No multi-centre or national published current practice studies were identified.

Stakeholders highlighted a selection of papers on rehabilitation, mainly concerning TKR, but these were primary studies or systematic reviews of primary studies and did not concern variation in practice.

[A study by Artz et al (2012)](https://doi.org/10.1002/msc.1027) reviewed post-discharge physiotherapy provision after THR and TKR at high-volume (500 hip or knee procedures annually) NHS hospitals in England and Wales. The study used NJR data from 2010, and responses from a telephone or email survey of physiotherapy clinicians. The study highlighted variation in the content of physiotherapy sessions following TKR:

Group sessions:

* All 23 centres offered knee strengthening and stretching exercises.
* Sessions varied in duration ranged from 20 to 60 minutes, and the number of sessions varied.
* 9 provided functional exercises.
* 6 provided individually tailored exercises.
* 3 provided task-specific exercises.
* Other exercises included proprioceptive and balance exercises.

One-to-one sessions:

* The duration was not specified.
* Exercises typically included specific knee joint exercises, functional exercises and advice.
* Manual therapy was used for people with restricted range of knee motion.
* 1 centre offered access to a pain management team.

### Long-term care

Stakeholders also commented on uncertainty around the best approaches to routine, long-term follow-up.

#### Selected recommendations

No recommendations identified.

#### UK current practice

No published studies on current practice were highlighted for this suggested area for quality improvement; this area is based on stakeholder’s knowledge and experience.

**Resource impact**

We do not expect this quality statement to have a significant impact on resources.

**Issues for consideration**

**For discussion:**

* There are no recommendations on long-term care.
* The RCOT recommendation on referral to community and other settings only concerns THR.
* There is only a ‘consider’ recommendation for people with cognitive impairment.
* There are multiple options for outpatient rehabilitation for shoulder replacement (implications for measurability).
* What is the key area for quality improvement?

**For decision:**

Should this area be prioritised for inclusion in the quality standard?

* 1. Additional areas

### Summary of suggestions

The improvement areas below were suggested as part of the stakeholder engagement exercise. However, they were felt to be either unsuitable for development as quality statements, outside the remit of this particular quality standard referral or need further discussion by the committee to establish potential for statement development.

There will be an opportunity for the committee to discuss these areas at the end of the Advisory Committee meeting.

Table 2 Summary of information available for additional areas

| Suggested area for improvement | Within remit of NICE QS | In scope | Guideline recs | Relevant  existing QS |
| --- | --- | --- | --- | --- |
| Audits and registries | No | No | No | No |
| Implants | No | Yes | TA403 | No |
| New guidance | No | No | No | No |
| Referral for joint surgery | Yes | No | Yes | Yes |

### Audits and registries

Reducing variation in the quality and completeness of data collected for the National Joint registry was suggested. Improving rates of consent and compliance were highlighted as supporting mechanisms, necessary to maintain an independent and effective system for monitoring the quality of joint replacement surgery, which includes the safety and performance of medical devices.

Improving participation in the collection of pre- and post-operative Patient Reported Outcome Measures (PROMs) was highlighted as a quality improvement area. Improving participation in the preoperative Oxford Shoulder Score for shoulder replacements was highlighted as a specific area for improvement. Stakeholders also felt that standardising PROMs questionnaires, especially those for shoulder surgery, would help improve participation. Using PROMs data to support shared decision making when people are considering joint surgery was a further suggestion.

These suggestions have not been progressed. Participation in registries and PROMs are methods by which quality improvement can be evidenced. Quality statements focus on actions that demonstrate high quality care or support, not the methods by which evidence is collated. However, suggested methods of data collection may be referred to in the quality measures for each statement.

### Implants

Stakeholders suggested that procurement policies should be rationalised, to ensure that clinically and cost-effective implants are used. Using ODEP-rated implants was also proposed as a quality improvement area.

Responsibility for providing ODEP rated implants was passed to NHS purchasing and supply functions after [NICE’s technology appraisal total hip replacement and resurfacing arthroplasty for end-stage arthritis of the hip TA304 (2014)](https://www.nice.org.uk/guidance/ta304) was published.

These areas cannot be progressed because quality standards support quality improvement and are not mandatory. Existing mechanisms are in place to ensure patients have access to treatments recommended by technology appraisals that the NHS is legally obliged to fund and resource.

### New guidance

Stakeholders suggested a range of topics.

* Standardising PROMs questionnaires.
* Whether hydrogen peroxide should be used in hip replacement surgery (and if it were to be recommended, that its use is recorded in the NJR).
* Delivery of ‘digital by default’ rehabilitation clinics.
* Prereferral and postoperative rehabilitation group consultations.
* Evaluation of multimodal pain strategies to improve long-term outcomes after knee surgery.
* Value of using FRAX at preoperative assessments for hip surgery, to assess for the likelihood of periprosthetic fractures.

These suggestions cannot be progressed because additional evidence and guidance is outside of the remit of quality standards. Suggestions for additional guidance will be passed on to the NICE centre for guidelines.

### Referral for joint surgery

Stakeholders suggested:

* Addressing variation in referral thresholds.
* Whether plain radiographs should be taken in primary care to support a referral or be performed in secondary care.
* Use of the Versus Arthritis (NICE-endorsed and referenced as an implementation support tool for [NICE’s guideline on osteoarthritis: care and management CG177](https://www.nice.org.uk/guidance/cg177/resources)) [musculoskeletal decision support tools](https://www.nice.org.uk/guidance/cg177/resources/endorsed-resource-decision-support-tools-for-use-in-primary-care-by-people-with-musculoskeletal-conditions-knee-problems-hip-problems-shoulder-problems-back-problems-and-sciatica-8957443933) to facilitate shared decision making prior to referral for joint surgery.

This area has not been progressed because the NICE guideline on [joint replacement (primary): hip, knee and shoulder](https://www.nice.org.uk/guidance/ng157) and the [associated NICE Pathway](https://pathways.nice.org.uk/pathways/joint-replacement) begin at the point of having been referred for consideration for elective joint replacement. Referral for consideration of joint surgery for people with osteoarthritis is covered by [NICE’s quality standard on osteoarthritis QS87](https://www.nice.org.uk/guidance/qs87/), statements 7 and 8.

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# Appendix 1: Suggestions from registered stakeholders

| ID | Stakeholder | Suggested key area for quality improvement | Why is this a key area for quality improvement? | Supporting information |
| --- | --- | --- | --- | --- |
| 1 | National Clinical Director, MSK conditions NHS England and NHS Improvement | **What 5 national priority areas for quality improvement would you want to see covered by this quality standard?**  To link with the high impact recommendations for the Best MSK health National Improvement programme aligned with the GIRFT driven High volume low complexity strategy driving elective restoration. Elective orthopaedic recommendations are key, as are the core recommendations. This reflect a whole pathways strategy, from referral, hospital care/procedure rehabilitation. Also the need for shared decision making and delivery within a personalised model. |  |  |
| 2 | National Clinical Director, MSK conditions NHS England and NHS Improvement | **Are there any relevant national audits or reports highlighting current practice that you think it would be helpful for the committee to be made aware of?**  GIRFT report orthopaedics, Relevant NJR reports. |  |  |
| 3 | National Clinical Director, MSK conditions NHS England and NHS Improvement | **Is there anything else happening in the topic area which you think may be of interest to the committee?**  Emergent work related to providing personalised support to those on waiting lists. |  |  |
| 4 | AGILE (Special Interest Group Representing Physiotherapists Working With Older People), Affiliated to the Chartered Society of Physiotherapy | **Self-management and preoperative care:**  1 | Pre-operative frailty screening | Frailty Screening prior to surgery predicts length of stay, morbidity and mortality and those likely to need transfer to a rehabilitation centre or ward post operatively which will support proactive identification of those likely to need specialist care and also improve discharge planning.  Wang et al. Frailty as a predictor of hospital length of stay after elective total joint replacements in elderly patients [BMC Musculoskelet Disord](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5771036/). 2018; 19: 14.  Published online 2018 Jan 16. doi: 10.1186/s12891-018-1935-8  Hall et al Association of a Frailty Screening Initiative With Postoperative Survival at 30, 180, and 365 Days JAMA Surg. 2017;152(3):233-240. doi:10.1001/jamasurg.2016.4219 |
| 5 | AGILE (Special Interest Group Representing Physiotherapists Working With Older People), Affiliated to the Chartered Society of Physiotherapy | **Self-management and preoperative care:**  2 | Preoperative rehabilitation and assessment | British Orthopaedic Association guidance supports the requirement to preoperatively assess those, particularly those screened as frail, to ensure that home adaptations required can be proactively planned, those likely to need supervised rehabilitation can be identified and patients can be taught exercises to optimally prepare them for surgery and to recover from surgery quickly. |
| 6 | British Orthopaedic Association (comments endorsed by the British Hip Society) | **Self-management and preoperative care:**  4 | Pre-habilitation | Good preoperative care is aimed at making the best use of the available time from the decision to operate to the commencement of surgery. For hip, knee and shoulder replacement this can involve not just optimising medical issues but also optimising physical fitness. The objective is to improve recovery time and maximise post-operative function  NICE NG157 recommendation 1.2 |
| 7 | NeuroCare Europe | **Self-management and preoperative care:**  1 Attention to muscle condition pre-operation | Pre-habilitation is rarely considered and usually not provisioned in the NHS This should change in order to optimise rehabilitation outcomes.  **Why is this important?**  Pre op muscle condition has been shown to be a major indicator and determinant of the prospects for full post-op rehabilitation | Evidence is mainly in the form of published clinical studies many of which have been noted in our response to the consultation phase  Here we supplement the already included clinical trial data with some further studies which broadly support our previously reached conclusions  Two of these studies make specific reference to the use of NMES along the rehabilitation treatment pathway |
| 8 | SCM2 | **Self-management and preoperative care:** Pre-operative care for hip & knee arthroplasty | Preoperative rehabilitation – sometimes known as joint school – varies throughout England with no consensus on format or who delivers it. Would need to cover those with cognitive impairment plus timing of onset of rehabilitation given the long wait times for primary elective joint replacement. Aware that NG157 included research recommendation for shoulder replacement. | <https://gettingitrightfirsttime.co.uk/wp-content/uploads/2020/02/GIRFT-orthopaedics-follow-up-report-February-2020.pdf>  See 6.1 Findings of original report and also 6.3 Developments since the original report. |
| 9 | SCM3 | **Self-management and preoperative care:**  1 Multidisciplinary pre-admission service for all patients including education and information, expectations, and preparation for surgery (this should be holistic, and account for both physical and mental health needs) | There is a variety of provision of pre-operative assessment and rehabilitation. Some services provide digital and/or written advice and information, others host “joint schools”, and others offer individual appointments. | Smith, T.O., Sackley, C.M. UK survey of occupational therapist’s and physiotherapist’s experiences and attitudes towards hip replacement precautions and equipment. BMC <https://doi.org/10.1186/s12891-016-1092-x>  Royal College of Occupational Therapists (2017) [Occupational therapy for people undergoing total hip replacement: practice guideline 2nd edition](https://www.rcot.co.uk/practice-resources/rcot-practice-guidelines/hip)  Getting it Right First Time (2020) [Getting It Right in Orthopaedics: reflecting on success and reinforcing improvement - a follow-up on the GIRFT national specialty report on orthopaedics](https://gettingitrightfirsttime.co.uk/wp-content/uploads/2020/02/GIRFT-orthopaedics-follow-up-report-February-2020.pdf)  NHS England’s quality improvement report indicates that there are MSK services led by advanced practitioners (e.g. physiotherapists) in some parts of the country who may be involved in supporting rehabilitation for patients before referred for joint replacement or in the preoperative phase.  NHS England (2017) [Transforming musculoskeletal and orthopaedic elective care services](https://www.england.nhs.uk/publication/transforming-musculoskeletal-and-orthopaedic-elective-care-services/) |
| 10 | SCM4 | **Self-management and preoperative care:** 1 | Pre-operative care for hip & knee arthroplasty | Evidence showed pre-operative rehab reduces length of stay, there is however variability on how this is delivered as well as the quality of information. For those patients with additional needs such as cognitive issues the need for more personalised care and education will ensure improved quality of care, such as the case study example below:  <https://www.england.nhs.uk/atlas_case_study/improving-pathways-in-elective-orthopaedic-arthroplasty-care/> |
| 11 | Versus Arthritis | **Self-management and preoperative care:**  3 Self-management support for people waiting for joint replacement surgery | Self-management support must be provided to enable people with arthritis to manage their pain and other symptoms, including their wellbeing, while being referred for surgery and waiting for surgery.  ICSs and NHS Trusts should offer in person or online peer-led, structured self-management support programmes, including those provided by Versus Arthritis. | Self-management was also recognised as a topic area of quality improvement in the NICE Quality Standard on Osteoarthritis ([QS87](https://www.nice.org.uk/guidance/qs87/resources/osteoarthritis-pdf-2098913613253)).  People living with chronic pain from arthritis often experience symptoms other than pain. [The Musculoskeletal Health Questionnaire (MSK-HQ)](https://www.thh.nhs.uk/documents/_Departments/therapies/backschool/MSK_HQ.pdf) is free to use within the NHS and can help people identify and prioritise areas where they need support.  Local PCNs and GP practices should work with people with arthritis and voluntary sector organisations to map national and local community resources, activities, organisations, networks and other groups that can support people who are waiting for joint replacement surgery. The [NHS X Musculoskeletal Digital Playbook](https://www.nhsx.nhs.uk/key-tools-and-info/digital-playbooks/musculoskeletal-digital-playbook/) and the [Best MSK Innovations Hub](https://bestmsk.crowdicity.com/category/193660) contain useful suggestions, for example on online pain management resources. |
| 12 | Versus Arthritis | **Self-management and preoperative care:**  4 Physical activity and exercise | Physical activity and exercise programmes designed to help people with arthritis stay active and prepare for joint replacement surgery should be actively promoted by Primary Care Networks.  Regular physical activity can reduce joint pain by 25% reducing the likelihood of impairment in walking and daily living activities by a third.  Practical advice on how to manage pain or fatigue while exercising should be provided by all healthcare professionals supporting people with arthritis. Within PCNs this is likely to be a combination of clinical staff such as First Contact Practitioners (FCPs), GPs, link workers and clinical pharmacists. | This area for quality improvement builds on the recommendations in the NICE Guideline and Quality Standard on Osteoarthritis.  The NICE Guideline on Osteoarthritis (CG177) recommends that healthcare professionals “advise people with osteoarthritis to exercise as a core treatment… irrespective of age, comorbidity, pain severity or disability… including local muscle strengthening and general aerobic fitness.”  Exercise was also recognised as a topic area of quality improvement in the NICE Quality Standard on Osteoarthritis ([QS87](https://www.nice.org.uk/guidance/qs87)) in 2015.  There are several helpful resources in this area that primary care teams can use. The [Royal College of GP’s Physical Activity and Lifestyle Toolkit](https://www.rcgp.org.uk/clinical-and-research/resources/toolkits/physical-activity-and-lifestyle.aspx) has been designed in partnership with Sport England to be used by primary care professionals working across the UK.  The Faculty of Sports and Exercise Medicine’s [Moving Medicine](https://movingmedicine.ac.uk/consultation-guides/condition/adult/msk/) resource for MSK pain, developed in collaboration with organisations including Versus Arthritis, aimed at people on surgery waiting lists, is another useful tool which healthcare professionals can use when directing or referring patients to supported physical activity.  A useful tool to support localities is the “[Providing physical activity interventions for people with musculoskeletal conditions](https://www.versusarthritis.org/media/2177/physical-activity-msk-health-report.pdf)” report, developed by Versus Arthritis (then Arthritis Research UK) in partnership with NHS England, Public Health England and the Department of Health in 2016, which includes a checklist to support the mapping of local activity provision.  Versus Arthritis also offers physical activity advice and support to which people with osteoarthritis waiting for surgery can be referred. Our current resources can be accessed here: [Exercising with arthritis | Top tips, specific exercises (versusarthritis.org)](https://www.versusarthritis.org/about-arthritis/exercising-with-arthritis/) |
| 13 | AGILE (Special Interest Group Representing Physiotherapists Working With Older People), Affiliated to the Chartered Society of Physiotherapy | **Shared decision making and information:** 5 | Shared decision making | NICE guidance on Shared Decision Making supports the importance of multidisciplinary guidance on the benefits and risk of interventions and also goal setting following intervention therefore the QS should consider the importance of clear goal setting in the pre and post operative recovery period which can be ably supported by AHPs. |
| 14 | British Elbow & Shoulder Society | **Shared decision making and information:** 2 Develop patient information material about shoulder replacements. | Currently, the type and content of information provided to patients varies considerably between providers. Standardisation is desirable and such material can be developed with the help of our BESS patient group.  **Why is this important?**  There is clear need for provision of standardised good quality information to patients to help with informed decision making about shoulder replacements. | Internet search engines confirm that many providers have their own patient information material, with considerable variation in the types and levels of information provided. |
| 15 | British Orthopaedic Association (comments endorsed by the British Hip Society) | **Shared decision making and information :** 1 | Shared decision making | Reaching the most beneficial decisions in an informed manner is crucial step in the management of hip, knee and shoulder conditions where joint replacement is contemplated. This requires the appropriate mechanism for that decision making combined with sound and pertinent information to inform those decisions.  NICE N157 2020 – Recommendation 1.1 |
| 16 | SCM5 | **Shared decision making and information** | Consistency of information giving, including written information / broader information pre-surgery and also during the pathway to and after surgery.  Including the type of information given in hip and knee schools / on websites - although it would not always be given in this format. |  |
| 17 | SCM6 | **Shared decision making and information:**  3 - Hip, knee and shoulder replacement  Provide patients with ‘patient information’ | Joint replacements are substantial operations and are being performed in more and more people. Outcomes are variable and not all patients do well. Accurate patient information on risks and outcomes as well as the process and recovery are needed and should be developed with evidence and with patient involvement. There has been no national standard for such information booklets/sources for hip, knee and shoulder replacement. The content and information that should be included of has been recommended in the recent NICE Guideline. | New NICE joint replacement guideline has identified this as an important area for a recommendation. The new guideline lists the information topics that should be available to patients considering joint replacement. See NICE Guideline on hip, knee and shoulder replacements |
| 18 | SCM7 | **Shared decision making and information:**  3 Shared decision making and information for people offered hip, knee or shoulder replacement | Offering improved communication, information and shared decision making is a NICE recommendation across a number of NICE guidelines and should be offered routinely but can variety within practice.  **Why is this important?**  Informing patients of the operation is important on decision making to have the procedure but also expectations on outcome which can be different between health professional and patients. | Perioperative care guideline. |
| 19 | Versus Arthritis | **Shared decision making and information:**  1 Clear communication with people waiting for Joint Replacement Surgery | Once placed on a waiting list for surgery, people should receive monthly, clear communication about their current predicted waiting time for surgery, and any alternatives that may be open to them for selecting different providers. | People who are on a waiting list for joint replacement surgery should have rapid access to a point of contact who can support with clinical and administrative queries and any problems that have arisen since their initial consultation.  Between October and December 2020, Versus Arthritis ran an on-line survey to understand more about the experiences of people waiting for joint replacement surgery. The survey findings highlighted the lack of communication between healthcare professionals and people waiting for surgery, and that this was a key priority for support. Of the 724 people who replied in England, 72.2% said that they had not been informed of their likely surgery date.  Every Integrated Care System (ICS) area in England should ensure that its constituent NHS organisations proactively communicate with every patient on a surgery waiting list.  NHS England has recognised the value of good communication with people on waiting lists through its recent guidance, “Good Communication with Patients Waiting for Care: Core Principles”. |
| 20 | NeuroCare Europe | **Anaesthesia, tranexamic acid and VTE prophylaxis:**  3: Avoidance of DVT | ICDs are only marginally effective.ICDs used in conjunction with LMWH are more effective but bring risks of bleeding. NMES devices are more effective than ICDs used alone or ICDs+LMWH as prophylaxis and bring the added advantage of stimulating muscle activity during treatment  **Why is this important**  Patients undergoing Joint replacement are at enhanced risk of DVT during and post operatively |  |
| 21 | SCM1 | **Anaesthesia, tranexamic acid and VTE prophylaxis:** 4 Use of TXA in hip and knee replacement | Use of TXA in hip and knee replacement There is clear evidence that the addition of topical TXA to IV/PO TXA reduces blood loss / need for transfusion after surgery. NICE therefore recommended the use of topical TXA in both the primary knee and hip setting.  Local survey of practice from my own unit demonstrated there remained variation in practice because of uncertainty about a) the timing this should be given b) the method of delivery (dilution / undiluted) c) dosing  This is a cheap and highly effective intervention that is not being used as surgeon are unclear how best to operationalise its use.  A QI project to produce clear guidance for surgeons and theatre teams would be potentially beneficial. |  |
| 22 | SCM7 | **Anaesthesia, tranexamic acid and VTE prophylaxis:**  4 Offer people having elective hip or knee replacement the choice of regional anaesthesia in combination with location infiltration analgesia (LIA) or general anaesthesia in combination with LIA. | The evidence-base suggest massive variability in the anaesthetic combinations offered to patients for elective hip and knee replacement and this variability should be reduced to promote best practice.  **Why is this important?**  Anaesthesia is key to a good early recovery in relation to pain and nausea. Offering the best analgesia will improve patient recovery and overall experience. | NICE guideline evidence synthesis highlights the variability of anaesthesia on offer. Clinical experience backs this up. |
| 23 | British Orthopaedic Association (comments endorsed by the British Hip Society) | **Surgery:** 3 | Avoiding implant selection errors | During joint replacement surgery, there is a point in the surgical procedure when the implant is selected. In a fashion similar to the WHO checklist at the beginning of the procedure, a further pause should be taken to check implant compatibility with the theatre team, to avoid error at the time of implantation.  NICE NG157 Recommendation 1.6 |
| 24 | NHS England & Improvement:  Patient safety division | **Surgery:** 1 | Variation in the uptake and implementation of hip cement curfew recommendations to identify potential for and the management of intraoperative Bone Cement Implantation Syndrome (BCIS). | Bone Cement Implantation Syndrome (BCIS) is a fatal condition with complex physiological changes occurring immediately after the insertion of cement during arthroplasty in both elective and trauma procedures.  NHS England and Improvement Patient Safety National Reporting and Learning System routinely receives reports of death and severe harm related to this syndrome.  A ‘cement or Coventry curfew’ is a recognised way to manage risk assessment and management of this syndrome and recommended by several national resources and organisations but it is unclear how widespread this practice is  [**Link to Anaesthesia News October 2014**](https://anaesthetists.org/Portals/0/PDFs/_Anaesthesia%20News%20PDFs%20compressed/2014/Anaesthesia_News_October_2014-min.pdf?ver=2018-12-11-104647-947)  **2015 AAGBI/British Orthopaedic Association/British Geriatric Society** [clinical guidance](https://www.boa.ac.uk/uploads/assets/7a224177-0a39-4833-bb8a1b9d609e92de/reducing-the-risk-of-cemented-arthroplasty-in-hip-fracture-surgery.pdf)provides BCIS specific clinical recommendations on selection and management of patients pre, intra and post operatively including adoption of ‘cement curfew ‘ time out procedure immediatley prior to cement insertion.  **2017/2019 NICE** [Clinical Guideline](https://www.nice.org.uk/guidance/cg124/resources/2019-surveillance-of-hip-fracture-management-nice-guideline-cg124-pdf-9025317437173) **124 Hip fracture: management** mentions the above guidance but only as a reference, no other recommendations.  ‘1.6.5 Use cemented implants in patients undergoing surgery with arthroplasty[1]’  The CG was reviewed in 2017 with no update to BCIS, surveillance review also in 2019 but made no recommendations related to BCIS.    **2017 Safe Anaesthesia Liaison Group** [Patient Safety Update](https://www.rcoa.ac.uk/sites/default/files/documents/2020-08/PSU-OCT-2017.pdf)  Identified learning points from reported incidents described some difficulties with cement curfew implementation:   * ‘cement implantation syndrome was not discussed within the surgical or anaesthetic consent process. This should probably be done and documented in patients who are high risk.’ * ‘communication between the surgical and anaesthetic teams was good however the cementing was not discussed at the WHO check.’ * ‘cement curfew did not take place formally we just discussed it around the time of cementing. Guidance should be available in theatre on how exactly this should be done to standardise this.’   [**2018 paper**](https://www.gmjournal.co.uk/under-reporting-of-bone-cement-implantation-syndrome) reviewing the evidence for and commenting on under-reporting of BCIS based on a small English study. Advances a protocol for patient selection, pre and intraoperative patient optimiazation  **Sept 2020** [**Association of Anaesthatists Guidelines Management of hip fractures**](https://anaesthetists.org/Home/Resources-publications/Guidelines/Management-of-hip-fractures-2020)   * BCIS guidance refers directly to 2015 AAGBI/BOAS/BGSguidance with no update * Recheck DNAR decision as part of WHO Safety Checklist prior to procedure * Consent for procedure refers directly to [**2017 updated AAGBI ‘Consent’ guidance**](https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/full/10.1111/anae.13762) in line with new Montgomery ruling that ‘all material risks’ need to be fully exlained when discussing consent with the patient   Makes recommendations for anaesthatists to be involved in the content of patient information materials relating to hip fracture surgery |
| 25 | SCM1 | **Surgery:** 1 Patella resurfacing for primary total knee replacement | Published NJR data on patella resurfacing demonstrates little change in the rate of patella resurfacing over the last 10 years (2011 - 36% of TKR resurfaced versus 2019 – 43% resurfaced). The NICE guideline should drive an increase in the practice of primary patella resurfacing. An additional driver to a change towards resurfacing is increased surgeon awareness that secondary (later) resurfacing is classified as a revision (revision rate is a metric surgeons are assessed against).  Currently surgeons have different thresholds to offer patella resurfacing – some do it all the time, some never do it and some do it selectively.  QI should seek to standardise the discussion had with patients about the pros / cons of patella resurfacing ??would a patient information tool be useful?? and drive an increase in adoption of this technique to reduce the cost of expensive secondary procedures. | NJR website carries data on rates of patella resurfacing by year.  NJR data has greater granularity on the procedures and implants used  No national data / audit on the discussion / shared decision making with patients |
| 26 | SCM1 | **Surgery:** 3 UKR for isolated medial compartment knee OA | There are a few QI standards that arise from this.  Not all surgeons offer UKR (and not all surgeons should as there is good evidence that there is a volume effect with this procedure as you should only undertake them if doing >20/yr and they make up 20% of your practice). However, it is unclear whether patients referred to these surgeons are being offered UKR as part of shared decision making and referred on to another surgeon / provider if it is decided that UKR is the preferred surgical approach.  There is a need to assess and address:   1. How UKR is discussed and offered to patients 2. Mechanisms for onward referral should UKR to the chosen surgical approach (within Trust or between Trust networks) 3. How surgical volume is maintained and monitored to ensure patients receive the best care | Point 3 is covered within GIRFT audits and hospital reviews.  Information relating to point 1 and 2 are less clear  NJR carries information on use of UKR as a proportion of all knee replacements (e.g. 8% in 2011 versus 12% in 2019) |
| 27 | SCM7 | **Surgery:** 1 Avoiding implant selection errors | Implant selection errors are ‘never events’ and should be prevented. We offer a solution which can be adopted into practice to prevent this.  **Why is this important?**  Implant selection errors should not occur. They have a devastating impact on the patient and society. We suggest a simple approach to attempt to prevent these occurring. | This was a British Orthopaedic Association recommended guideline topic when we developed the guidelines and therefore has considerable clinical importance which will also aid implementation. |
| 28 | SCM7 | **Surgery:** 2 Offer a choice of partial or total knee replacement to people with isolated medial compartmental osteoarthritis. | There is a requirement to improve the communication pathway between surgical teams within hospitals to facilitate this improvement. This will take some consideration and the NICE team could help here provide guidance on how this can be implemented. Without guidance, I feel that this may be a challenging recommendation to put into practice.  **Why is this important?**  There is strong evidence that partial knee replacements offer superior clinical and cost-effective outcomes for some patients compared to total knee replacements but these are not offered in practice. Patients should be offered these. | Good evidence behind this recommendation, particularly from recent NIHR funded trials i.e. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6727069/> |
| 29 | Zimmer Biomet | **Surgery:** 1 | Partial knee replacement  NICE guidance recommends that a choice of partial or total knee replacement should be offered to people with isolated medial compartmental osteoarthritis.  The recommendation was made based on lower complication rates of partial knees and the likelihood of being more cost saving compared with total knee replacement. The outcomes for each type of surgery are thought to be similar although recovery after partial knee replacement tends to be faster, with a shorter stay in hospital and less pain during the recovery period.  Published pathways for each type of surgery should include this important decision making step and there should be inclusion in National best practice guidance documents | Joint replacement (primary): hip, knee and shoulder  NICE guideline Published: 4 June 2020  www.nice.org.uk/guidance/ng157 |
| 30 | AGILE (Special Interest Group Representing Physiotherapists Working With Older People), Affiliated to the Chartered Society of Physiotherapy | **Postoperative rehabilitation and long-term care:** 3 | Post operative rehabilitation and goal setting. | NICE guideline NG 157 supports assessment of patients by a physiotherapist and occupational therapist prior to discharge from hospital which should include identification of those with frailty, functional impairment or cognitive impairment which will necessitate supervised rehabilitation either in an inpatient rehabilitation setting or in the community. |
| 31 | AGILE (Special Interest Group Representing Physiotherapists Working With Older People), Affiliated to the Chartered Society of Physiotherapy | **Postoperative rehabilitation and long-term care:** 4 | Community rehabilitation | NICE guidance on patients with hip fracture supports the timely provision of ongoing rehabilitation in community settings. Similarities between people with frailty who experience hip fracture and people with frailty who require joint replacement would suggest that it is likely that the more timely rehabilitation is following discharge the better the functional outcome will be. |
| 32 | Bristol Medical School (Musculoskeletal Research Unit) | **Postoperative rehabilitation and long-term care:** 2: Evidence based post-operative care to prevent and mitigate long-term issues | TKR is performed to reduce pain and improve function for people with osteoarthritis; however, 20-30% of patients with TKR report long-term disability and 10-34% report chronic pain. Many people do not return to more demanding activities after TKR, such as gardening, kneeling, sports and valued leisure activities. These poor outcomes have a considerable negative impact on quality of life. Post-operative inpatient physiotherapy is focussed on early functional recovery and independent mobilisation to ensure safe hospital discharge, rather than long-term functional improvement. The optimal time to deliver interventions targeted at improving long-term function and pain after TKR may be after hospital discharge.  **Why is this important?**  Supplementing usual NHS care with post-discharge group‐based outpatient physiotherapy has short-term benefit and may improve function up to a year after TKR but the effect may not be clinically important. For post-discharge exercise-based rehabilitation, there is no evidence that one type of physiotherapy intervention is more effective than another at preventing chronic pain after TKR. For people with long-term pain after TKR, few evidence-based interventions are available. Further research is needed to evaluate non-exercise interventions, including the provision of care as part of a stratified and multidisciplinary care package. | Artz, N, Elvers, KT, Minns Lowe, C, Sackley, C, Jepson, P, Beswick, AD. Effectiveness of physiotherapy exercise following total knee replacement: Systematic review and meta-analysis. BMC Musculoskel Disord 2015; 16(1): 15. DOI: 10.1186/s12891-015-0469-6.  Wylde V, Dennis J, Gooberman-Hill R, et al. Effectiveness of postdischarge interventions for reducing the severity of chronic pain after total knee replacement: systematic review of randomised controlled trials. BMJ Open 2018;8:e020368. doi: 10.1136/bmjopen-2017-020368  Lenguerrand, E., Artz, N., Marques, E., Sanderson, E., Lewis, K., Murray, J., Parwez, T., Bertram, W., Beswick, A.D., Burston, A., Gooberman‐Hill, R., Blom, A.W. and Wylde, V. (2020), Effect of group‐based outpatient physiotherapy on function after total knee replacement: The ARENA randomised controlled trial. Arthritis Care Res. Accepted Author Manuscript. doi:10.1002/acr.23909  Wylde, V., Howells, N., Bertram, W. et al. Development of a complex intervention for people with chronic pain after knee replacement: the STAR care pathway. Trials 19, 61 (2018). https://doi.org/10.1186/s13063-017-2391-8  Beswick AD, Wylde V, Gooberman-Hill RInterventions for the prediction and management of chronic postsurgical pain after total knee replacement: systematic review of randomised controlled trials BMJ Open 2015;5:e007387. doi: 10.1136/bmjopen-2014-007387 |
| 33 | Bristol Medical School (Musculoskeletal Research Unit) | **Postoperative rehabilitation and long-term care:** 2  Evidence based post-operative care to prevent and mitigate long-term issues | **Why is this important?**  Observational studies have shown that preoperative osteoporosis is associated with more periprosthetic bone loss 3 years after primary hip arthroplasty[1].  [1] Rahmy, A. I. A., Gosens, T., Blake, G. M., Tonino, A., and Fogelman, I. Periprosthetic bone remodelling of two types of uncemented femoral implant with proximal hydroxyapatite coating: a 3-year follow-up study addressing the influence of prosthesis design and preoperative bone density on periprosthetic bone loss. Osteoporosis | Supporting information  Epidemiological studies suggest that approximately 25%[1] to 45%[2] of women undergoing hip arthroplasty have osteoporosis, with only 25% of these being treated appropriately with bisphosphonates[1].  [1] Labuda, Anna, Papaioannou, Alexandra, Pritchard, Janet, Kennedy, Court, DeBeer, Justin, and Adachi, Jonathan D. Prevalence of Osteoporosis in Osteoarthritic Patients Undergoing Total Hip or Total Knee Arthroplasty. Archives of Physical Medicine and Rehabilitation 89(12), 2373-2374. 2008.  [2] Mäkinen, Tatu J., Alm, Jessica J., Laine, Hanna, Svedström, Erkki, and Aro, Hannu T. The incidence of osteopenia and osteoporosis in women with hip osteoarthritis scheduled for cementless total joint replacement. Bone 40(4), 1041-1047. 2007. |
| 34 | British Elbow & Shoulder Society | **Postoperative rehabilitation and long-term care:** 3  Post-operative rehabilitation. | There is variation in the timing, access, content and delivery of post-operative rehabilitation following shoulder replacements. One aspect of this that would help with standardising is the start of physiotherapy delivery, which should be within 24 hours of surgery.  **Why is this important?**  Physiotherapy should start within 24 hours for shoulder replacements. |  |
| 35 | British Orthopaedic Association (comments endorsed by the British Hip Society) | **Postoperative rehabilitation and long-term care:** 5 | Post-operative rehabilitation | Shoulder, hip and knee replacement aim to reduce pain and restore function. Restoration of function and regaining independence is more rapid and complete with therapy support. In-patient rehabilitation hastens recovery and discharge and outpatient rehabilitation improves and maintains the benefit of the surgical procedure |
| 36 | NeuroCare Europe | **Post-operative rehabilitation and long-term care:** 2 Development of effective rehabilitation programmes post joint replacement | Effective post –op rehabilitation is crucial to the recovery of full mobility and hence self sufficiency and HRQoL  There are presently clinically proven, unutilised therapies in use elsewhere which could transform the quality of rehab currently practiced in the UK  **Why is this important?**  Most of the available evidence is that current provision is inconsistent, of poor quality and largely ineffective. Many patients never recover their pre-op mobility and strength | **Publications on rehab after joint replacement relevant to all key areas chosen**  **Rehabilitation after total joint replacement: a scoping study** [Deborah L. Snell,Julia Hipango,K. Anne Sinnott,Jennifer A. Dunn,Alastair Rothwell,C. Jean Hsieh,](https://www.tandfonline.com/author/Dunn%2C+Jennifer+A)  **Results**: Thirty individual studies and seven systematic reviews were included, with most research examining the effectiveness of physiotherapy-based exercise rehabilitation after total knee replacement using randomized control trial methods. Rehabilitation after hip and knee replacement whether carried out at the clinic or monitored at home, appears beneficial but type, intensity and duration of interventions were not consistently associated with outcomes. The burden of comorbidities rather than specific rehabilitation approach may better predict rehabilitation outcome. Monitoring of recovery and therapeutic attention appear important but little is known about optimal levels and methods required to maximize outcomes.  This study comments on the influence of comorbidities on rehabilitation outcomes  [Phys Sportsmed.](https://www.ncbi.nlm.nih.gov/pubmed/29125384) 2018 Feb;46(1):36-43. doi: 10.1080/00913847.2018.1403274. Epub 2017 Nov 15.**Is it necessary to perform prehabilitation exercise for patients undergoing total knee arthroplasty: meta-analysis of randomized controlled trials.**  [Chen H1, Li S1, Ruan T1, Liu L1, Fang L1](https://www.ncbi.nlm.nih.gov/pubmed/?term=Liu%20L%5BAuthor%5D&cauthor=true&cauthor_uid=29125384).  Conclusions : Our meta-analysis found that prehabilitation exercise was effective in reducing length of hospital stay. Importantly, it was an effective method for improving knee ROM and sit-to-stand test after TKA. However, there was no effect of prehabilitation exercise on the improvement of quadriceps strength, 6-minute walk, pain and functional recovery following TKA.  **Effectiveness of pre-operative physiotherapy-based programmes on outcomes following total knee arthroplasty: a systematic review and meta-analysis** : [Lucy Simmons](https://www.tandfonline.com/author/Simmons%2C+Lucy) &[Toby Smith](https://www.tandfonline.com/author/Smith%2C+Toby)  Of those studies reporting on objective measures of function, five out of eight studies reported no significant difference with the inclusion of pre-operative rehabilitation (P>0·05). Interventions based on neuromuscular electrical stimulation or proprioception in the intervention group demonstrated improvements in sit-to-stand and stair climbing/descending ability (P≤0·05) at 12 weeks after TKA.  [J Exp Orthop](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6179978/). 2018 Dec; 5: 44.Published online 2018 Oct 11. doi: [10.1186/s40634-018-0156-2](https://dx.doi.org/10.1186%2Fs40634-018-0156-2) Rehabilitation strategies for optimisation of functional recovery after major joint replacement [Thomas Bandholm, 1,2,3](https://www.ncbi.nlm.nih.gov/pubmed/?term=Bandholm%20T%5BAuthor%5D&cauthor=true&cauthor_uid=30306337) [Thomas W. Wainwright,4](https://www.ncbi.nlm.nih.gov/pubmed/?term=Wainwright%20TW%5BAuthor%5D&cauthor=true&cauthor_uid=30306337) and [Henrik kehlet5](https://www.ncbi.nlm.nih.gov/pubmed/?term=Kehlet%20H%5BAuthor%5D&cauthor=true&cauthor_uid=30306337)  **Conclusions** : In summary, there is a continuous major need to improve functional recovery after hip and knee replacement, because studies to date have not found superiority of one exercise regime over another. However, whilst exercise-based rehabilitation seems superior to no or minimal rehabilitation after THA and TKA, future rehabilitation strategies will require us to examine different patient groups and the use of specific postoperative rehabilitation interventions based within “enriched” trial designs  .  Within the study thie paragraph is included :  Similarly, the promising results of another technology, perioperative neuromuscular electrical stimulation (NMES) requires further investigation (Spector et al. [2016](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6179978/#CR34)) before recommendations can be provided. The potential role of NMES in accelerating the recovery of muscle function should be evaluated along with its effect using different setting parameters on symptoms such as pain and oedema. It’s use immediately post-surgery (before discharge) may also offer benefits, where by it can enable a high exercise volume, with little effort, at a time point where muscle inhibition is most pronounced. In addition, in post-discharge rehabilitation, its combination with exercise interventions (non-simultaneously) has also been argued as optimal (Vanderthommen and Duchateau [2007](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6179978/#CR36))  [BMC Musculoskelet Disord](https://www.ncbi.nlm.nih.gov/pubmed/30696416). 2019 Jan 29;20(1):42. doi: 10.1186/s12891-019-2415-5.  What is the evidence to support early supervised exercise therapy after primary total knee replacement? A systematic review and meta-analysis.  Sattler LN[1,2,3](https://www.ncbi.nlm.nih.gov/pubmed/?term=Sattler%20LN%5BAuthor%5D&cauthor=true&cauthor_uid=30696416), [Hing WA4](https://www.ncbi.nlm.nih.gov/pubmed/?term=Hing%20WA%5BAuthor%5D&cauthor=true&cauthor_uid=30696416), [Vertullo CJ4,5,6](https://www.ncbi.nlm.nih.gov/pubmed/?term=Vertullo%20CJ%5BAuthor%5D&cauthor=true&cauthor_uid=30696416)The paucity and heterogeneity of existing studies that examine early supervised exercise therapy following TKR surgery makes it challenging for clinicians to deliver high-quality evidence-based exercise programs in the early postoperative period. Although superior knee flexion range was found across differing regimes, the meta-analysis showed no significant difference in this outcome between groups at 6 weeks. The results of this review show high quality randomized clinical trials are urgently needed to evaluate the impact of early exercise following TKR surgery. |
| 37 | NeuroCare Europe | **Postoperative rehabilitation and long-term care:** 4 Earlier treatment post diagnosis | Lack of adequate rehabilitation causes/contributes to a growing dependency and rapidly rising social care costs  **Why is this important?**  Financial pressures are causing necessary treatment to be much delayed with the result that immobility and pain become more pronounced. This makes subsequent full recovery much more problematic and unlikely and contributes to growing lack of self-sufficiency and rising social care costs |  |
| 38 | SCM1 | **Postoperative rehabilitation and long-term care:** 2  Provision of physiotherapy within 24 hours of surgery | GIRFT national audit has found variation in the provision of physiotherapy resources available to support patients in the immediate post-operative period. This has led to variation in care dependent upon day of surgery (e.g. patients operated on a Friday may not see a physio until a Monday is there is no weekend cover).  Provision should be 7 days a week and protected for elective orthopaedic patients (ie not shared with other areas of the hospital that might draw resource) | Examples in the GIRFT orthopaedic where the audit and GIRFT approach has helped Trusts drive change and improve physio resource within units (e.g. good example of case report for Freeman Hospital, Newcastle) |
| 39 | SCM2 | **Post-operative rehabilitation and long-term care:**  2 | Postoperative rehabilitation – although a more developed area as process starts before discharge, there is still variation in provision of self-directed rehabilitation versus supervised group rehabilitation post-discharge. Duration of postoperative rehabilitation should, ideally, also be included. NG157 includes recommendations for postoperative rehabilitation for shoulder replacement. Would need to cover those with cognitive impairment. | As above |
| 40 | SCM3 | **Post-operative rehabilitation and long-term care:** 2  Post-operative rehabilitation, spanning inpatient to community settings, is personalised and holistic, delivered by a multi-disciplinary team to meet the physical, social and mental health needs of patients | Inpatient, outpatient and community rehabilitation services are often fragmented and delivered by different teams/ services. There is variability in the availability of therapy on weekends and access to different the MDT members involved in rehabilitation. There is also variability in practice across the country. | The follow up GIRFT report highlights the variability in service provision, particularly for physiotherapy in the immediate inpatient post-op period as well as outpatient/ community based follow up.  Getting it Right First Time (2020) [Getting It Right in Orthopaedics: reflecting on success and reinforcing improvement - a follow-up on the GIRFT national specialty report on orthopaedics](https://gettingitrightfirsttime.co.uk/wp-content/uploads/2020/02/GIRFT-orthopaedics-follow-up-report-February-2020.pdf)  Drummond et al (2012) and Smith and Sackley (2016) (references below) suggested that there was variability in occupational therapy practice in terms of supporting patients to maintain hip precautions following THR. Some work has been done since this was published to evaluate to use of/ compliance with hip precautions and many units no longer standardly apply these, however, further exploration / evaluation of practice at a national level would be of benefit.  Drummond A, Coole C, Brewin C, Sinclair E. Hip Precautions following Primary Total Hip Replacement: A National Survey of Current Occupational Therapy Practice. British Journal of Occupational Therapy. 2012;75(4):164-170. doi:10.4276/030802212X13336366278059  Smith, T.O., Sackley, C.M. (2016)bUK survey of occupational therapist’s and physiotherapist’s experiences and attitudes towards hip replacement precautions and equipment. BMC Musculoskelet Disord 17, 228. <https://doi.org/10.1186/s12891-016-1092-x> |
| 41 | SCM4 | **Postoperative rehabilitation and long-term care:** 2 | Post Operative Rehabilitation for arthroplasty: hip/knee/shoulder | There is geographical variability in outcome for hip and knee arthroplasty this may be related to access to post-operative care. In light of the COVID pandemic there may be further inequalities in access to services |
| 42 | SCM4 | **Postoperative rehabilitation and long-term care:** 3 | Long term monitoring | There is geographical variability in outcome for hip and knee arthroplasty this may be related to access to post-operative care. In light of the COVID pandemic there may be further inequalities in access to services  Routine arthroplasty follow up long term is costly and requires considerable clinical time. |
| 43 | SCM6 | **Postoperative rehabilitation and long-term care:** 2 -Hip, knee and shoulder replacement  Provide patients with post-operative advice and rehabilitation within 24 hours of joint replacement surgery | Early guidance and mobilisation from bed by a therapist leads to earlier discharge and less complications associated with immobility, leading to better outcomes from the joint replacement operation. There is likely variation in practice and availability throughout the NHS, including access at weekends if surgery takes place on Friday or Saturday. | The new NICE joint replacement guideline has identified this as an important requirement and need. See NICE Guideline on hip, knee and shoulder replacements. |
| 44 | SCM7 | **Post-operative rehabilitation and long-term care:**  5 Provide patients following hip and knee replacement a self-directed supervised physiotherapy programme rather than routine referral to physiotherapy | Not all patients require physiotherapy. Those who need physiotherapy, do not always receive them due to resources and waiting lists. This recommendation means that only those who need to see a physiotherapist as an outpatient will be referred whilst those who can self-managed with be provided with correct materials and support to do so. This is a more efficient use of resources for patients and physiotherapy team. Changing some services practice from routine to individualised referral patterns may require some support. These guidelines will help this transition.  **Why is this important?**  Patients are frequently referred to physiotherapy following knee replacement with a large number of patients referred to physiotherapy following hip replacement. Whilst this is important for some, it is not for all. The recommendation for self-directed physiotherapy as routinely and those who require outpatient physiotherapy as optional is important to ensure that patients receive the correct level of rehabilitation rather than a ‘blanket referral’ - this would be more in-line with the evidence-base and more appropriate for physiotherapy resources | National variability in physiotherapy needs support to be addressed for equality in service https://www.sciencedirect.com/science/  article/pii/S0031940619301257?via%3Dihub |
| 45 | Versus Arthritis | **Postoperative rehabilitation and long-term care:** 5  Rehabilitation and post-surgery | Following joint replacement surgery, people should be offered a rehabilitation package that includes peer support, physical activity support and mental health support where needed. | The updated NICE Guideline on Osteoarthritis (CG177) recommends that “When discussing the possibility of joint surgery, check that the person has been offered at least the core treatments for osteoarthritis… and give them information about… recovery and rehabilitation after surgery.”  A recent report which Versus Arthritis endorsed, [Moving Forward Stronger: addressing deterioration in people with long-term conditions during the pandemic](https://www.alzheimers.org.uk/sites/default/files/2021-06/moving-forward-stronger.pdf), calls for a two-year national rehabilitation and recovery strategy embedded in local ICSs for those with long-term conditions who have seen their conditions deteriorate during the pandemic.  More broadly, there have been many recent pressures on access to rehabilitation services, including through longer surgery and treatment waiting lists caused by the pandemic. Furthermore, new pressures could arise as a result of Long Covid and its impact of mobility. It is important that rehabilitation following joint replacement surgery is not deprioritised in any way as it is key to making a good and sustained recovery. |
| 46 | British Elbow & Shoulder Society | **Additional areas – audits and registries**  1 Improve compliance with collection of pre-operative Patient Reported Outcome Measures (PROMs) by healthcare providers. | Evidence from the National Joint Registry confirms compliance with collection of pre-operative OSS by providers of shoulder replacements remains low and identifying this as a quality standard will help improve organisational compliance.  **Why is this important?**  Provides good evidence of longitudinal improvement in patient reported Oxford Shoulder Score (OSS) to monitor provision and performance of shoulder replacements. Pre-operative OSS is an important aspect of this monitoring. | The National Joint Registry routinely collects the Oxford Shoulder Score for monitoring of performance of shoulder replacements. PROMs form an important aspect of performance assessment within the annual reports: <https://reports.njrcentre.org.uk> |
| 47 | British Orthopaedic Association (comments endorsed by the British Hip Society) | **Additional areas – audits and registries:** 2 | Patient reported outcomes | To inform shared decision making it necessary that the patients and surgeon are aware of the potential benefits and harms of a proposed procedure. The information of benefits are best gathered from the reports of the patients who have undergone procedures themselves. As advised in the Cumberledge report such data should be collected in the form of PROMs.  The Cumberlege Report of the Independent Medicines and Medical Devices Safety Review makes reference to patient reported outcomes (PROMs) in 2 of its 9 recommendations. The first is that the Regulator (MHRA) needs to reform and ensure that in monitoring Implanted devices such as joint replacements, it should engage more with patients and their outcomes. Nationally collected PROMs would fulfil this need. |
| 48 | National Joint Registry | **Additional areas – audits and registries**  1 Improve compliance with collection of pre- and post-operative Patient Reported Outcome Measures (PROMs) by healthcare providers. | Evidence from the National Joint Registry and National PROMs confirms compliance with collection of pre-operative OSS by providers of shoulder replacements remains low and identifying this as a quality standard will help improve organisational compliance. Follow up rates (6 months and 12 months) for hip and knees PROMS are also relatively low.  **Why is this important?**  Provides good evidence of longitudinal improvement in patient reported functional scores to monitor provision and performance of joint replacements. Pre-operative PROMS is an important aspect of this monitoring. |  |
| 49 | National Joint Registry | **Additional areas – audits and registries**  3 An independent and functional system for monitoring joint replacement performance should be maintained. | Engagement with the national registry, although good overall, des vary between units with some units able to consent close to 100% of patients while other struggle with this. Quality improvement to improve rates of consent and compliance to the NJR would benefit the overall picture of joint replacement surgery, as well as data sources for future evidence.  **Why is this important**  Safety and performance of medical devices is a hot topic with the Cumberlege report, but NJR has a nearly 15 year history of delivering this for arthroplasty surgery. A well-resourced, independent registry with high-quality data in terms of consent and completeness is crucial to the measurement of standards and the driving up of quality. |  |
| 50 | SCM6 | **Additional areas – audits and registries**  1 - Shoulder Specific.  Collection of NJR Pre-operative Q1 PROM (Oxford Shoulder Score) | Q1 (pre-op) collection of PROMS for Hip and Knee replacement surgery is established. This is not the case for shoulder replacement patients and should be a key area for quality improvement in order to provide patients and clinicians information on the outcomes from the increasing number of shoulder replacements being performed with different types of implants.  The average completion rates by Trusts are very poor and around 45% collection compliance with a national range of 0% to 79%. The main barrier in my view is shoulder PROMS are not mandated, there is no Tariff uplift and so Trusts do not support their clinical teams in collecting shoulder replacement pre-op PROMS. | NJR data from the limited PROMS returns in the 2016 report suggested that 8% of elective shoulder patients are worse after shoulder replacements. This would not have been detected with revision surgery alone and this % could be higher or lower as the data collection is incomplete. There is a pressing need to increase the Q1 compliance of Hospital Trusts.  The Cumberledge Report has also been published over the last 12 months further adding weight to PROMS collection after shoulder replacement surgery  The NJR has now only agreed to collect post op shoulder PROMS if a pre-operative Q1 PROM is collected. The best timing of post operative PROMS is not known but the British Elbow and Shoulder Society agreed with the NJR that a 6 month, 3 year and 5 year post op PROM should be collected |
| 51 | National Joint Registry | **Additional areas - implants:** 4 Hospitals should consider the health economic benefit of implants choices when procuring implants. | There is substantial variation in both the prices paid for the same implants by different hospitals and the relative cost-effectiveness of those implants in clinical practice. NJR provide feedback tools that allow units and surgeons to understand the performance of implants offset against the cost paid. Quality improvement in this area could be targeted about engagement with these data tools. We also feel that rationalisation to a discrete set of implant choices per hospital/Trust should form part of the quality standard.  **Why is this important?**  There are many orthopaedic implants currently on the market – many of which have high rates of survival. However, the price of these implants to the NHS and independent sector hospitals varies enormously – both between implants and for the same implants procured by different customers. A clear picture of health economic performance should be established as part of a unit’s procurement policy. |  |
| 52 | National Joint Registry | **Additional areas – implants:** 2  ODEP rated prostheses should be chosen to ensure that implant survival rates are optimised. | Use of ODEP rated implants remains variable with some surgeons and units achieving this for 100% of cases, and others demonstrating much lower results. Although reasons for implants not having a rating are various – including implants that are new to market or part of a clinical trial –it should be possible to identify and reduce variation through targeted quality improvement.  **Why is this important?**  Implant choice is a major factor in the outcome of joint replacement surgery. ODEP provides objective ratings of hip, knee and should replacement prostheses allowing surgeons and hospitals to make informed choices about the implants they use. |  |
| 53 | Arthroplasty Care Practitioners’ Association | **Additional areas – new guidance:** 1 PROMS used in long-term care for those with hip and knee arthroplasty | In NG157 published in June 2020, it was acknowledged that uncertainty persists over the long-term care of patients with a hip or knee arthroplasty. Within that uncertainty, there is no standardisation of which PROMS are best suited to collecting long-term data to inform the quality care of arthroplasty patients. We are concerned that patient burden (multiple requests to complete surveys and questionnaires) will lead to a decrease in response rates, a problem which is already of concern in collection of the PROMs data pre- and post-operatively and which threatens the quality of any data collected.  NICE guidance for the most effective, least burdensome PROMs for long-term care and recommendations of databases that could be accessed to aggregate the data, perhaps through orthopaedic societies. | Existing information of wide variety of use of PROMS and intervals at which they are collected can be found through the National PROMS network: audit of current practice – a small sample of orthopaedic units.  https://promsnetwork.co.uk/working\_group\_2/ |
| 54 | Arthroplasty Care Practitioners’ Association | **Additional areas – new guidance:** 2 The routine application of a tourniquet in Total Knee Arthroplasty | A recent Cochrane review found that the use of a tourniquet in total knee arthroplasty confers some benefit for the surgical procedure but is associated with an increase in adverse effects for the patient.  [Tourniquet use for knee replacement surgery - Ahmed, I - 2020 | Cochrane Library](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD012874.pub2/full?highlightAbstract=tourniquet)  Use of tourniquet in routine TKA continues to be debated and guidance for patient safety is needed. | Supporting information: Possible use of NJR dataset linked with PROMS to explore early outcomes of tourniquet use. |
| 55 | Bristol Medical School (Musculoskeletal Research Unit) | **Additional areas - new guidance:** 1  Pre-surgical preparation for patients | Nearly 100,000 people receive a primary total knee replacement in the UK each year. Although knee replacement provides a good outcome for many people, around 10-34% of people experience problematic long-term pain afterwards.  **Why is this important?**  In knee replacement, prehabilitation that only includes physiotherapy has not provided long-term ‘clinically-important’ benefit after surgery in randomised controlled trials. More general prehabilitation is included within care pathways called ‘Enhanced Recovery After Surgery’ (ERAS). In the UK, ERAS was implemented for knee replacement in 2009 and focuses on elements of care such as patient education, attention to fluid intake and intra-operative analgesia, and early postoperative mobilisation. Despite its value in care optimisation, ERAS does not target known psychological and behavioural risk factors, associated with post-operative pain and distress. There is a lack of evaluations of other preoperative interventions, such as multimodal pain management, which may improve long-term pain outcomes after TKR. | Supporting information  Dennis J, Wylde V, Gooberman-Hill R, Blom AW, Beswick AD. Effects of presurgical interventions on chronic pain after total knee replacement: a systematic review and meta-analysis of randomised controlled trials. BMJ Open. 2020;10(1):e033248.  Whale K, Wylde V, Beswick A, Rathbone J, Vedhara K, Gooberman-Hill R. The effectiveness and reporting standards of psychological interventions for improving short and long-term pain outcomes after total knee replacement: a systematic review. BMJ Open, 2019; 9(12):e029742. |
| 56 | Bristol Medical School (Musculoskeletal Research Unit) | **Additional areas – new guidance:** 3 Utility of fracture risk assessment at the time of elective joint replacement to reduce risk of peri-prosthetic fracture (>12 months) post surgery | To reduce fracture risk.  Hip fractures account for greatest spend for NHS after stroke care, so they are worth stopping  **Why is this important?**  Because many people have total hip replacement and total knee replacement, and these are the same population who have fractures 10 years later, and so it is a good time to assess fracture risk. and there are tools eg FRAX (endorsed by NICE) for doing just that | FRAX |
| 57 | Connect Health | **Additional areas – new guidance:** 4 | Guidance on how post-operative rehabilitation should be virtual by default | COVID has seen an increase in virtual rehab options however, the pandemic experience has the opportunity to continue digital use but also the risk to default to previous care models. This previous recommendation has been hard to implement due to stakeholder perception that face-to-face is the gold standard, further support from NICE to aid implementation will be welcomed. |
| 58 | Connect Health | **Additional areas – new guidance:** Additional areas of emergent practice | Group consultations for pre-referral; post-operative rehabilitation. | Evidence these work well in other LTCs, pilots and evaluations ongoing in pockets, a recommendation to support or challenge ongoing evaluation welcomed. |
| 59 | NHS England/Improvement – Patient Safety Division | **Additional areas – new guidance:** 2 | Use of hydrogen peroxide – difference in advice from MHRA and from BOA/BHS. | MHRA [guidance](https://www.gov.uk/drug-safety-update/hydrogen-peroxide-reminder-of-risk-of-gas-embolism-when-used-in-surgery) states “Do not use [hydrogen peroxide] in closed body cavities or on deep or large wounds”.  The British Hip Society (supported by the BOA) state that “In essence we are of the opinion that hydrogen peroxide can be used in the femoral canal during hip replacement surgery as long as it is vented appropriately. This has been standard practice of centres for many years.”  The position of the use of hydrogen peroxide in joint replacement needs to be clarified and if it is to be used, then its use should be recorded in the National Joint Registry form. |
| 60 | Connect Health | **Additional areas – referral:** 1 | Agreement on criteria for when joint replacements should be considered. | Various ICSs are developing thresholds for surgical referral which are similar, but variation exists, a consistent steer will minimise a postcode lottery and aid implementation. |
| 61 | Connect Health | **Additional areas – referral:** 2 | Agreement on where diagnostics should be undertaken in the pathway. | As above, diagnostic use in MSK is increasing for knee pain some of this driven by pathway variation – should up to date plain films be undertaken in the community prior to referral, or left with secondary care to arrange and referred without imaging? |
| 62 | Connect Health | **Additional areas – referral:** 3 | Guidance on whether or not BMI of a certain level should or should not prevent referral or procedure. | Various ICSs are developing thresholds for surgical referral which are similar, but variation exists, a consistent steer will minimise a postcode lottery and aid implementation as necessary. |
| 63 | Versus Arthritis | **Additional areas – referral: Key area for quality improvement:** 2  Shared Decision making prior to referral for Joint Replacement Surgery | Prior to referral for consideration of joint replacement surgery, people should participate in an informed/shared decision making process, which is documented in their clinical record and shared at the point of referral.  Support should include local implementation of the Musculoskeletal Decision Support Tools developed by Versus Arthritis in 2020, with funding from NHS England. | The Musculoskeletal Decision Support Tools can be accessed here:  <https://www.versusarthritis.org/about-arthritis/healthcare-professionals/musculoskeletal-decision-support-tools/>  In December 2020, NICE provided endorsement of the Decision Support Tools in primary care by people with Musculoskeletal Conditions (Knee problems, Hip problems, Shoulder problems, Back problems and Sciatica):  “These decision support tools accurately reflect recommendations in the NICE guidance on osteoarthritis and low back pain and sciatica in over 16s. They also support statements 1-7 in the NICE Quality Standard for osteoarthritis and statements 2-7 in the NICE Quality Standard for low back pain and sciatica in over 16s.” |
| 64 | Royal College of Nursing | Nothing to add on this occasion.  Responded 2020; did not suggest any areas. | N/A | N/A |