

End Stage Ankle Arthritis Treatment Pathway

**Good clinical and operational practice guidance
Post-COVID Transformation & Recovery programme
July 2020**

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1 Introduction

- 1.1 Getting It Right First Time (GIRFT) is an NHS improvement programme led by frontline clinicians designed to improve the quality of care within the NHS by reducing unwarranted variation. Sharing best practice nationally continues to identify change to improve patient care and patient outcome. It drives efficiencies to reduce unnecessary interventions to deliver cost savings.
- 1.2 Over the past few months, the NHS has seen an unprecedented pace of transformation as a result of COVID-19. The Trauma & Orthopaedic community was at the forefront of implementing rapid collaborative change and innovations as a response to the COVID-19 pandemic where elective and trauma services were significantly impacted. It is recognised that positive practice has arisen during this period all over the country^{1,2,3} especially in areas of Outpatients, Diagnostics, Management & Governance of minor injuries, and medical rotas that will support improved outcomes and patient experience to become part of the 'new normal' and can be applied for the betterment of the NHS.
- 1.3 With orthopaedic services making up more than 25% of all surgical interventions, the service is particularly impacted by the cessation of elective activity. This has created new challenges: higher numbers of patients on the waiting list, reduced theatre productivity, longer waiting times and managing services whilst maintaining safety for patients and staff in light of the pandemic. This will mean every opportunity will need to be taken to improve efficiency.
- 1.4 As we now look to restarting elective services the GIRFT programme recommends the use of this unique opportunity to combine the GIRFT datasets and review the service on the basis of recent experience. This will transform the way in which services are designed, coordinated and delivered as the NHS moves into the recovery and transformation phase post Covid-19, and will improve the quality and standard of care for patients.
- 1.5 GIRFT has brought about significant qualitative and quantitative improvement in orthopaedic surgery^{4, 5}. In its drive for continuous improvement it recommends using the greater potential to utilise networks, theatre space and resources to maximise productivity within the NHS regions and minimise disruption as a result of COVID-19. Breaking down barriers between organisations and teams will be crucial to delivering this. To fully harness this opportunity to embed positive change, it is crucial the programme moves at pace, following the lead set by units across the UK. The GIRFT orthopaedic pilot project will harmonise policies (as below) and the experience and learnings will be shared nationally (proposed GIRFT QI academy).

- 1.6 The GIRFT team are already underway with the development of the model, data provision and best practice development. The GIRFT programme believes that in order to raise the standards across the board the *current* top decile performance nationally should now be set as the ‘GIRFT standard’ for all services within the NHS as they incrementally restart following the Covid crisis. By setting this high standard for care and reducing any unwarranted variation there is a potential to further improve metrics detailed in section 13.4 that include:
- Release bed days
 - Reductions in readmissions
 - Enhanced patient experience
 - Improve patient flow by increasing capacity of emergency beds & trauma theatres
 - Make Emergency departments more efficient
 - Improvement in training standards
 - Improved long term survivorship of implants
 - Procurement savings
- 1.7 GIRFT will be expecting units to deliver further innovations and improvements that will be captured and incorporated into regular iterations of this document to enable the rapid dissemination of learning nationally. This initiative aims to initially review clinical pathways for orthopaedic conditions in its London hub and develop a ‘best of the best’ standardised clinical pathway to improve the experience and care for those patients who will need elective surgery in the shortest possible time, without compromising safety. As the project rolls out nationally it is anticipated that there will need to be some flexibility to accommodate local and regional requirements.
- 1.8 The GIRFT guide provides the integrated care systems with a sequential process based on best practice, national guidelines and expert decision making for the management of all patients referred with joint pain that resultantly require surgical intervention (including joint replacement surgery).
- 1.9 The GIRFT hot and cold site pilot programmes⁵ have shown that wherever possible it is critical that inpatient elective work is centralised to one geographical area or site with day surgery cases done in dedicated units at different areas or sites⁶. The elective areas should be COVID-19 protected, equipped with ring fenced elective orthopaedic base, laminar flow theatres, appropriate plans for medical, diagnostic and specialty support including immediate back up high dependency services to patients who are higher risk as per the recommendation of the Faculty of Intensive Care Medicine⁷
- 1.10 There must be an emphasis on enhanced recovery programmes that will improve patient flow and reduction in total use of bed days. All patients who have been listed for surgery

should have the principles or culture of enhanced recovery applied as part of a formal programme with optimum post-operative support in the community.

- 1.11 Shared decision making⁸ should be built into points along the care pathway to encourage patient choice and participation. This is particularly relevant when people face ‘high value’ decisions where the choice can have a significant impact (positive or negative) on their lives. At these decision points, options should include medical and conservative treatments, symptomatic management and (where relevant) the option of psychosocial/community support.

2 Key Recommendations

General	
	The Integrated Care System (ICS) should create COVID-19 protected zones where elective surgery is performed.
	Inpatient elective work is centralised to these geographical area(s).
	All patients should be admitted to dedicated ring fenced orthopaedic elective wards and all support services available during operating hours (incl. x-ray and path labs).
	Patients with complex medical needs may need a different pathway if all support services are unavailable.
	Each patient pathway that involves elective surgery should have the principles or culture of enhanced recovery and emphasis must be placed on such a programme
	The integrated care system should establish systems for advice and guidance such that primary care networks and secondary care work in conjunction to improve communication and streamline the pathway for patients.
	In line with the NHS Long Term Plan the ICS should encourage virtual consultation and improve patient convenience, specialist accessibility and ease clinical space shortage.
	MSK specialist triage referral management system is in place with clear clinical pathways and a referral management plan.
	Regular job planned multi-disciplinary team meetings with clear terms of reference about decision making and governance.
	ICS should put resources into patient education programme.
	The integrated care system (or the regional network) should have a virtual PTL per sub speciality that will add further intelligence to the demand and capacity plans
	The integrated care system (or the region) should consider a ‘clinician passport’ such that clinicians can move between hospitals.
	There should be a standardised clear policy to assess clinical harm if patients cannot be operated or followed up with in line with the nationally mandated RTT standard.

	Comprehensive elective service should be incrementally provided over 7 days where possible, after taking into consideration issues of staff wellbeing and recruitment.
	The ICS should model the capacity they will generate by peer reviewing themselves within the top decile.
	The ICS should have a standardised WHO surgical safety checklist protocol across all its hospitals to ensure patient safety.
	The ICS should have a patient level information and costing system in place such that true costs of a procedure are easily available for comparison.

Specialist	
	First OP appointment should occur within six weeks of referral for routine patients.
	Shared decision making should be built into points along the care pathway.
	Patients should have single point of contact to advise of illness or reason for delay or cancellation so others can take operation slot
	There should be consent clinics in place at around the time of the preoperative assessment.
	Pre-assessment teams should be multidisciplinary and include representation from Clinical Pharmacy and Pain Management.
	Pre-assessment should be complete within a minimum of 6 weeks before surgery if not sooner and a pool of pre-assessed patients should be available to fill last-minute cancellations.
	Clear preoperative anaemia screening and treatment protocols must be in place. It is substandard clinical practice to proceed with elective surgery with iron deficiency anaemia and carries additional clinical risk.
	A Pre-operative Education Group with appropriate and comprehensive professional input.
	Patients should be admitted on the day of surgery and admissions should be staggered if possible. List efficiency is paramount.
	Neuraxial (single spinal) should be considered as an alternative to general anaesthesia for elective patients when possible.
	Monitor use of ODEP 10A rated prostheses (or those with a comparable track record) are used in all patients.
	Any new or modified implant should have had an independent assessment by the Beyond Compliance project
	Senior review should occur for all patients with a seven-day physiotherapy service

3 Initial presentation with ankle arthritis

3.1 Background

Total Ankle Replacement (TAR) and ankle fusion are the main treatments for end stage ankle arthritis.

It is not currently understood which patients are best treated with fusion and which with TAR.

However recent evidence has challenged prior beliefs that significant deformity is a contra-indication to TAR [REF]. Indeed, evidence is accumulating that it is the patients with more severe, multiple-joint disease, often with deformity, who gain more from TAR compared to fusion [REF] as long as the deformities are recognised and corrected [REF], sometimes by 2-stage surgery [REF]

There is also evidence from the NJR that there is a significance variance across the UK in the access to TAR for patients [REF]. The reasons for this are not fully understood but GIRFT wishes to address this via the ICS or network model to ensure as far as possible patients get the most appropriate operation.

3.2 Expectation of management prior to referral

Attempt at conservative treatment for at least 3 months prior to referral (unless clinical circumstances are exceptional) e.g. medication (anti-inflammatories, analgesics), physiotherapy, support with lifestyle, smoking cessation and weight loss for patients with BMI >30 (e.g. exercise group, community referrals/support).

If referral is deemed appropriate, the patient needs to be aware about the possibility of the outcome from referral being surgical intervention, including need to plan for recovery time and support from carers.

3.3 It is recommended that an MSK specialist Triage⁹ referral management system is in place

3.3 Making a referral for consideration for surgery

Any referral to the Trauma and Orthopaedic department should include:

- Medical history.
- Detail of failed attempts at conservative treatment to date.
- Detail of pain or functional disability and impact on quality of life.

- Confirmation that the patient would be happy to have surgical intervention if deemed necessary.
- Weight bearing X-ray within 6 months (standing AP & lateral).
- Documentation should also be provided to indicate:
 - Advice and guidance in relation to weight loss (patients with BMI>30, abdominal girth>4cm over chest)
 - Information and support for smoking cessation is mandatory prior to referral

3.4 **Optimising patients for surgery**

If the patient has medical problems that may affect their fitness for surgery the GP should begin optimisation of these comorbidities in primary care (diabetes, AF etc). This may prevent delays before surgery. Where difficulties in management of these medical issues are detected early in the pathway, best practice would be early communication between the primary care and perioperative care teams. If the patient is returned to their GP or an appropriate specialty for optimisation later in the pathway, clear instructions should be provided by pre-operative assessment team.

4 **Surgical review and assessment**

- 4.1 First OP appointment should occur face to face within six weeks of referral for routine patients.
- 4.2 Patients should have access to information on ankle arthritis prior to being seen by a Foot and ankle surgeon (ankle.arthritis.co.uk or similar).
- 4.3 **Assessment by Foot and Ankle surgeon in outpatients**
 - Review of medical history and imaging.
 - Assess severity of pain and impact on the patient's function, quality of life, occupation and leisure activities.
 - Physical examination of deformity, range of motion, effusions, tenderness, gait guidelines.
 - Discuss risks and benefits of surgery and conservative treatment.
 - Explain the surgical options and how the patient wishes to proceed including the option to assimilate the information and make a decision later perhaps at a virtual review or if that surgeon does not offer TAR the opportunity to be seen by a colleague in the ICS or network that does.
 - Discuss expectations around length of stay, recovery time and support required with time for questions.
 - Assess pre-existing pain score at rest and movement if patient hasn't done so via portal (no pain, mild, moderate to severe).

- Identify high risk patients based on age and comorbidities for Comprehensive Geriatric Assessment and more in depth Shared Decision Making consultation involving the anaesthetic team before finalising decision for surgery in this group of patients.
- The surgeon should be experienced in all aspects of hindfoot deformity correction and consider alternatives to ankle replacement such as osteotomy and fusion around and including the ankle.

4.4 Documentation

It is important to include enough detail regarding the information that was provided to the patient as part of shared decision making that led to the decision to proceed with surgical intervention. This must include:

- Description of the pain (e.g. intensity, onset, duration, character, aggravation and relieving factors, sleep deprivation due to pain).
- Limitation of activities of daily living (e.g. restricted walking, night pain).
- Safety issues e.g. fall.
- Contra-indications to non-surgical treatments.
- Listing and description of failed non-surgical treatments e.g. injections, physical therapy or weight loss.
- Physical examination including deformity, range of motion, crepitus, effusions, tenderness, gait description (with/without mobility aids)
- Results of any applicable investigations e.g. radiographs.
- Other clinical judgements e.g. reasons for deviating from stepped care approach.
- All patients should be consented in accordance with RCS guidance^{9, 10}
- As part of shared decision making national and professional guidance with regards to current ways of working, self-isolation and COVID related complications need to be documented.
- Preferably two surgeon cases should be accounted for in the NJR with the case counting for both surgeons

4.5 Multi-disciplinary team meetings

There should be established regular multidisciplinary team meetings conducted either virtually or face to face.

The remit of the MDT should encompass regular review of the clinical and efficiency metrics as described in section 13.3 and 13.4.

MDT's should regularly and formally link with local units within their ICS to jointly develop a functional clinical network. The network will develop local pathways in particular for

complex problems and for dealing with potential complications (wound breakdown, prosthetic joint infections, revision surgery etc.) ensuring a seamless delivery of care between units.

All MDT and wider network related activity should be recognised as part of consultant job planning

4.6 Listing the patient for surgery and preparation

When a patient is listed for surgery the action should generate the following:

- Referral to Patient Education Group
- Triage pre-assessment and referral to pre-operative assessment.
- Wait listing of the patient*.
- Order for phases 1, 2 and 3 of nursing, medical inpatient and therapies care.
- Order 2 week f/up, 6 week surgical f/up, 6 months f/up including PROMs and 1 year f/up including PROMS and an X-ray order.

It is important to make patients feel that their care is individualised.

The potential date of surgery and likely discharge would preferably be mutually agreed upon at the time of listing patients for surgery in the outpatient clinics.

Patients should have a single point of contact to advice of illness or reason for delay or cancellation.

4.7 Consent Clinic

Consenting is a process which continues throughout a patient's care^{10, 11}.

Information should be provided at the time of initial consultation and in addition there should be consent clinics in place at around the time of the preoperative assessment (about 6 weeks before surgery).

The patient undergoing planned surgery should have the opportunity to reflect on their decision and may need to ask further questions and there should be the facility to allow that. This may be particularly necessary when there is a significant delay prior to surgery or when there is a need to clarify the surgical plan via the MDT

Consenting should include the theoretical risks of contracting Covid-19 which may result in serious life threatening complications.

It is not acceptable to obtain consent for planned elective surgery on the day of admission. The signing of a consent form, whilst necessary, is not evidence of adequate consent rather it is the evidence of the consent process that is important.

4.7 Theatre Scheduling

There should be an effective 6–4–2 theatre management process that plans and sequences operating lists, whereby the theatre programme is reviewed on a weekly basis and looking six weeks ahead¹². This checks that an appropriate number of theatre lists are scheduled to meet activity assumptions, that clinicians are available and not on leave and that operating lists are scheduled in a timely manner.

The 6–4–2 meeting should be chaired by a senior decision-maker who can ensure immediate action and changes.

Ankle replacements should be ideally aggregated onto one list to make the best use of surgical expertise and plan equipment needs.

4.8 Patient education and counselling

- Educating patients before surgery leads to reduction in length of stay and has a beneficial effect on their anxiety. It should be carried throughout the care pathway.
- Provide the patient with all relevant information and advice, reiterating GP advice around smoking cessation, weight loss, alcohol consumption and exercise.
- In some cases a dietetic review may be needed to achieve adequate nutritional status.
- The expected length of stay should be specifically discussed and recorded in their consultation summary.
- The feeling of individualised care should also be re-enforced in the meetings with Physiotherapists and Occupational Therapist in the pre-operative education group. This enables patients to take responsibility for participation in their recovery after surgery.

5 Pre-surgery education and preparation

5.1 Pre-operative Education Group attendance

Attendance at the Pre-operative Education Group is a required step prior to surgery and should be documented. Patients should attend this 4-8 weeks prior to surgery.

The following teams should be represented to give advice and information:

- Physiotherapy
- Occupational therapy
- The nurse specialists who will look after the patient
- Pharmacy representation
- Pain management team

The Group will highlight the principles of Enhanced Recovery taking into account the patients' care needs post discharge including any supportive equipment the patient may need on discharge which supplied and fitted before the patient's admission (wherever possible).

Patients should be encouraged to bring their support person with them.

5.2 Key outcomes of Patient Education Group

- Provide update on pre-op and post-op self-isolation during the COVID crisis.
- Highlight the importance of following all guidance including from the surgeon and other members of the hospital team to ensure optimal recovery, improved pain management, earlier mobilisation and improved outcomes.
- Overview of surgical procedure - benefits, symptom management, risks and complications.
- Set expectations around pain management.
Information about benefits of spinal anaesthetic technique, use of music and audiobooks. Early mobilisation and length of stay for optimal patient-reported outcome measures and to avoid dissatisfaction from unmet expectations.
- Preparation for hospital stay including what to bring (named toiletries, 2 sets of loose day and night clothes and appropriate footwear that can fit into a locker), what to expect the night before and morning of surgery (showering, pre-op drinks) and other advice (exercise in hospital, medication, visiting times).
- Discharge planning should start at pre-assessment and in the Patient Education Group
- Highlight the need to prepare discharge destination for safety, ease and comfort following discharge (stock up on meals to avoid errands during recovery, ensure home is cleaned prior to surgery, store items you need to access to avoid bending or reaching).

5.3 Checklist for completion of Patient Education Group:

- Safety advice given regarding home environment,
- Identify if OT assessment is needed.
- Identify if patient has had a fall in the previous 12 months.
- Patients are provided with a booklet or a DVD that gives them an overview of their prospective admission and recovery, as well as a brief introduction about the hospital/Unit. Some units have Apps and patients are encouraged to download them via the App Store or Play Store.
- Smoking cessation: local audits suggest that 10% of patients smoke. All patients should receive information from their surgeon on this issue and should be counselled over the risks of surgery and continuing to smoke.

6 Pre-operative assessment and preparation

- 6.1 The process of determining patient's anaesthetic fitness for surgery starts in the outpatient clinic. The aim is to optimise patients for surgery and to avoid cancellations on

the day of surgery. Cancellations on the day of surgery lead to negative patient experience and financial loss, most of which could be avoided.

- 6.2 The preoperative assessment should be standardised and electronic such that it allows patients to be assessed on multiple sites and the patients can have their surgery at any of the sites within the integrated care system.
- 6.3 Pre-assessment should be complete within a minimum 6 weeks of surgery and a pool of pre-assessed patients should be available to fill last-minute cancellations. Ideally pre-assessment should be done early in the pathway to allow time for risk modification, comorbidity optimisation

Covid-19

Pre-op assessment may require the need for testing prior 72-48 hours prior to the operation with a pre and post-operative period of self-isolation recommended

6.4 **Anaemia**

Patients should be screened for anaemia. Hb <13 (international consensus statement though local protocols Hb levels are often HB <12 ♀ or <13 ♂) are treated preoperatively with oral or IV iron to reduce the need for perioperative blood transfusion.

It is substandard clinical practice to proceed with elective surgery with iron deficiency anaemia and carries significant clinical risk.

Pathways should be in place to refer back to GP or colorectal teams for urgent investigation of severe unexplained IDA

6.5 **Diabetic management:**

Guidelines for managing diabetic patients should be in place based around the development of a diabetic perioperative team as detailed in the NCEPOD diabetic report recommendations¹³. Ideally target HbA1c <69mmol/l.

Recommendations include:

Multidisciplinary management.

Preoperative assessment of diabetes control and effective management and control.

Clinical lead for perioperative diabetes care.

Standardised referral process for elective surgery including HbA1c within 3/12 of surgery.

Close peri-operative monitoring.

Safe handover of patients from theatre recovery to ward staff.

6.6 **Pain Control**

The pain control team should be part of the Pre-assessment clinic and a proper program should be set up for opiate reduction or change to other pain regimes prior to surgery to avoid issues peri-operatively.

6.7 **Infection control**

Skin examination on surgical site.

MRSA & MSSA Screening:

Using a single swab which is tested for both MRSA and MSSA Patients with +MRSA require 5 days treatment and clear result for 3 weeks after

Advice provided includes:

- Showering on the night before and morning of surgery.
- Use of anti-bacterial wipes or antimicrobial body wash before surgery.
- Remove nail varnish, rings, avoid shaving, apply nasal gel twice daily from day before surgery.

6.8 Medication checking

- There should be a clear local ICS guidelines stating how medications should be administered or omitted in the peri-operative period and inform peri-operative management of many common medications (e.g. Statins, ACE inhibitors, Aspirin, oral anti-coagulations).
- Patients, their medication, and the proposed surgery, should be considered in a holistic manner with risks and benefits considered for each case. If there is any doubt about the peri-operative management of any medication, advice should be sought from a senior member of the anesthetic, surgical, specialty team or pharmacy (medicine information) as appropriate. This advice, when appropriately documented, will then supersede the management outlined in this guideline.
- Patients are seen by the clinical pharmacy team who will obtain a full medication history at pre-assessment.
- The patient is provided with advice on any medication that may need withholding pre-operatively.
- Continue any long-term analgesia including opioids and anti-hypertensives but not blood thinners unless stated.
- All patients should be encouraged to reduce their opioid intake prior to surgery to allow for safer and more effective post-operative analgesia.
- There should be a standardised local protocol about post-operative analgesia that avoids opiates on discharge.
- Make sure patients have their own supply of over the counter pain medication and laxatives for when they go home.
- The pharmacy team also provides verbal counselling on the medication usually started post-operatively, as well as a written patient information leaflet for the patient to take home.

6.9 If electronic patient records permit advance preparation of the inpatient treatment chart should be considered and the pharmacy team aim to see the patient on the day of surgery to ensure regular medicines are continued or withheld as per guidance on peri-operative medicines management. The standard drugs used as part of the Orthopaedic Enhanced Recovery pathway are prescribed by selecting the EPR template.

6.10 A specialist nurse phones the patient two nights before surgery. It is critical to reiterate to the patient the medicines that need to stop on this call.

7 The day of surgery

- 7.1 All patients are admitted for surgery within the nationally mandated time frames
- 7.2 All patients must be admitted to a dedicated ring fenced orthopaedic elective ward and all support services available during operating hours (incl. x-ray and path labs).
- 7.3 Patients should be admitted on the day of surgery. Admissions should be staggered over the day to minimise pre-operative fasting and reduce patient anxiety.
- 7.4 The consent form signed at the time of the consent clinic is confirmed on the day of surgery by the operating surgeon. The operating surgeon should verify the surgical site marking as per best practice protocol that is standardised across the ICS to avoid any never events. An indelible pen should be used to mark the intended surgical site and the mark should be placed in a location that makes it visible after preparation of the skin and draping, so that it can be checked before skin incision.
- 7.5 Confirm patient understanding of post-operative pain management, ambulation and carer role (Nurse, Surgeon and Anaesthetist).
Verify medical history and clearance for surgery (Nurse, Surgeon).
Order necessary medications (Anaesthetist / Pharmacists).
VTE risk assessment completed (Nurse, Surgeon).
- 7.6 **Peri-operative fasting and Carbohydrate Drinks**

The pre-operative fasting times are actively managed to reduce undue physiological stresses. The policy is to stop taking solid food 6 hours prior to surgery but continue with clear fluids up to 2 hours (or even less as per local ICS guidelines) prior to surgery. The use of high energy drinks pre-operatively has been reported to be safe and may have a positive influence on wide range of peri-operative markers of clinical outcome

Ensure patients have a supply of pre-op drinks for night before and day of surgery (non-diabetics).

	Morning List	Afternoon List
Admitted	0730	1130
Eat Until	Midnight	0630
Drink Until	0630 – have a glass of water at this time *	1100- have a glass of water at this time *
Pre op CHO drink	Before Midnight	Before 0630
Post Op CHO drink	In Recovery	

In the recovery, patients are offered a choice of high energy carbohydrate (CHO) drinks if they are not feeling nauseated. Commonly used drinks contain 300kcal/200mls.

7.7 Pre-warming should be used routinely in the pre-operative phase. Patients are asked to wear conductive fabric or forced air warming blankets for at least 30 minutes for pre-warming. There is good evidence that pre-warming patients results in reducing the risk of inadvertent hypothermia, which could result in coagulopathy with increased risk of transfusion, cardiac dysfunction and risk of infection.

7.8 **Pre-operative checklist**

The ICS should have a standardised WHO surgical safety checklist protocol to ensure patient safety. It should include details related to pre and post-surgery briefing, sign in prior to anaesthesia, “Stop before you block” for regional anaesthesia, The Time Out Pause before surgery commences and Sign Out.

8 **Anaesthetic guidelines**

8.1 Neuraxial (single spinal) rather than general anaesthesia is recommended for elective patients where possible. Patients usually have a low dose spinal anaesthesia using 3.5-4ml 0.25% plain bupivacaine (or rarely 2ml of 0.5% Bupivacaine (heavy), with light sedation (e.g.propofol) with supplemental popliteal block

8.2 If patient unable to tolerate spinal anaesthetic or specifically requests GA then general anaesthetic +/- regional technique is acceptable but using fast acting, easily reversible agents for GA.

8.3 Avoid using opiates for the spinal anaesthetic as this helps to reduce the need for urinary catheterisation.

8.4 **Standard intraoperative analgesic regime**

- Paracetamol IV 1g.
- Often oral opiate prescribed prior to theatre.
- Fentanyl PCA –IV for rescue analgesia if rarely required.
- Ketamine IV 0.5mg/kg at induction for patients with chronic pain issues.
- Popliteal block

8.5 **Antiemesis**

Ondansetron (4mg) +/- Dexamethasone is used as prophylactic anti-emetics, intravenously.

8.6 **Antibiotic prophylaxis**

The routine prophylactic antibiotics should be according to the local protocol as infection risks will vary. If gentamicin is used it the dose will vary depending on the patient

(weight/chronic kidney disease). Antibiotics are put in separate 100ml bags of normal saline and given between 30-60 minutes prior to incision.

8.7 Intra-venous fluids are judiciously used and patients are encouraged oral intake in recovery. Unnecessary lines should be removed as soon as possible.

8.8 **Tranexamic Acid (TXA)**

As part of the Blood Management programme the surgeon needs to assess the need for TXA. Patients receive a combination dose of IV TXA at induction with topical administration to deep tissues prior to closure with a maximum combined dose of TXA is 3g.

9 **Implant choice and surgical technique**

9.1 There should be a clear, evidence-based, rationale for using an ankle replacement; It follows therefore that while variation in implant use is acceptable, it should not adversely affect the patient outcomes or the organisation's finances.

9.2 Any new or modified ankle implant should have had an independent assessment by the Beyond Compliance project such that introduction of such implants is safe, stepwise and well supported as they are monitored¹³.

9.3 Ankle fusion is performed by open or arthroscopic means. NHS 2017/8 figures show that 30% of fusions were done arthroscopically

9.4 Regardless of whether ankle fusion or replacement is done the outcome of surgery should be a functional balanced foot. This may entail additional procedures for instance osteotomies, fusions and tendon transfers These may be performed in a single procedure or as a staged one.

9.5 International studies seem to support a positive surgeon volume-outcome relationship for most procedures/conditions. It is recommended that low volume surgeons be encouraged to increase their activity by collaborative working with the high volume centres either by dual surgeon operating or the use of regional clinician passports. The expectation is that a surgeon has participated in the following volumes⁵.

approximately 6 ankle joint replacements per annum including joint cases
approximately 6 ankle fusions per annum

9.6 Surgical procedures, as per other parts of the pathway, should be standardised where possible so that the whole process is predictably reproducible and familiar to the whole staff. This process will result in shortening the operative time and hence the surgical stress and blood loss.

9.7 It is recommended that the core clinical theatre team (surgeon, anaesthetist, ODP and Nursing) for every list is relatively consistent on a week to week basis and specialist orthopaedic scrub nurses who understand the procedure (especially joint replacement) to

be standard. The working culture should foster development of a wider team that encourages multi-professional training and safety audits (especially in relation to human factor training). As example is that as routine practice, "walk through in theatre" does not occur and excess staff are not in theatres to minimise risk of infection.

- 9.8 When TAR is done, before the implant is inserted there should be a further "time out" to check the correct size and side of implant is inserted.
- 9.9 A high-quality submission into the National Joint Registry database and BOFAS Registry must be completed.
- 9.10 Data should be captured at the point of care that will measure procedure time and all the consumables used such that a high level of information and costing is available at patient level.
- 9.11 All cases should be entered onto the NJR and the BOFAS registry.

10 Venous Thromboembolism prophylaxis

- 10.1 Units should utilise a nationally agreed compliant thromboprophylaxis risk assessment
Prophylaxis to be managed as per local MDT guidelines for VTE

11 Inpatient management

- 11.1 Senior review should occur for all patients prior to discharge supported by a seven-day physiotherapy service.
- 11.2 **Phase 1 of enhanced recovery: within the first 24 hrs**
Administer post-op recovery medications.
Monitoring temperature, HR, BP, assess for respiratory problems.
In recovery – Patient to commence breathing, circulatory, range of movement and strengthening exercises as taught in Patient Education Group.

Therapy:

- The important aspect of Enhanced Recovery is to enable patients to independently perform routine activities like eating, dressing and walking as early as possible.
- Mobilise on the day of the surgery, by physiotherapists but also by nursing staff.
- Establish a standardised protocol to follow for assessment for day 0 mobilisation.
- Nurses should have competency in day 0 mobilisation.
- An initial assessment takes place 2 hours after the patient returns from recovery.

- Encourage patients to get dressed in their own clothes prior to mobilising to reinforce that they are in the rehabilitation phase of their recovery.
- Encourage patients to achieve independent mobility for toileting needs on the first day.
- Mobilisation twice daily (movement and strength assessed, assisted walking with frame, sit out several times throughout the day and have all meals in the chair).
- Oxycodone 20-30 mins prior to mobilising on day 1 and 2 if required.
- Check support in place for discharge or Section 2 if needed.
- Check equipment in place for discharge if needed.
- Check follow up appointment made, many will require a 2 week plaster removal.
- Check plaster advice given.

Early Pain management

- Use ice therapy as prescribed.
- Assess pain at rest and movement 0-3 and set realistic pain management goal Regular paracetamol (1g qds).
- NSAIDS ibuprofen (400mg) if not on aspirin for patients with eGFR>60 and no other contraindications.
- Oral opiates (e.g. Oxycodone 10mg bd or 5-10mg Oxycodone 5-10 mg up to every 2 hours if pain assessed as ≥ 2 (if eGFR <60 or >80 years) for a maximum of 48 hours with no opiates prescribed at discharge.
- There is good evidence that listening to music reduces post-operative pain, anxiety and the use of analgesia; and it also increases patients' satisfaction.

Other

- Falls assessment.
- X-ray to confirm prosthesis placement if intra-operative radiographs not taken.
- Check INR and renal function if taking oral anticoagulants alert 24 hours post-surgery if on oral anticoagulants.
- Assess for respiratory disease/other complications.
- All inpatients prescribed with Sennakot, lactulose and antiemetics.

Phase 2 of enhanced recovery: within the first 48 hrs

- Continue own exercises 5 times daily.
- Aim to remain out of bed as much as possible, dressed in own day clothes.
- Twice daily therapy sessions whilst in hospital to progress walking, strength, movement and independence.
- Referral to social services if needed.

Phase 3 of enhanced recovery: discharge criteria

- Criteria-led discharge should be in place on all wards.
- Reasonably pain free on regular analgesia.
- Voiding urine without catheter.
- Individual therapy goals achieved.
- Patient ambulant with walking aid.
- Able to manage stairs safely (+/- appropriate aid).
- Able to transfer independently (+/- appropriate aid).
- X-ray checked, wound checked.
- Satisfactory post-operative bloods (FBC and U&E).
- All occupational therapy equipment in place.
- Physio and surgical follow-ups in place.
- All occupational therapy equipment in place.
- Care package in place (if needed).

12 Follow up Procedures

12.1 Patient information provided on the ward prior to discharge

- Falls prevention leaflet.
- Manufacturer's instructions for any equipment or mobility aids provided.
- Discharge booklet.
- DVT leaflet (mandatory).
- Wound care instructions.
- Exercise advice (booklet format) and a mobility progression plan.
- Discharge letter.
- Patients are advised to wash and dress their lower half in sitting and to apply caution when getting in and out of the car.

12.2 Wound care

- Patients are advised that the surgical dressing should not be changed or disturbed.
- A sticker is applied to the dressing with this information and the emergency contact number.
- Patients are advised to phone this number to contact the wound clinic if there are any concerns.
- If patients present with wound problems of infection they should not be empirically treated with antibiotics as it may diminish ability to later isolate an organism to treat. The surgical team should be contacted as soon as possible for advice.

- Suture removal/wound inspection at a nurse led hospital clinic with consultant support.

12.3 Pain management and other prescriptions on discharge

- Analgesia provided 6 weeks post-op¹.
- Avoid opiates at discharge but if rarely required patients should also be referred to the community pain team.
- VTE prophylaxis as per national guidance (NG89 NICE).
- Patient asked to complete daily portal to gauge pain:
 - I. Were you able to sleep last night?
 - II. Pain scores at rest and movement
 - III. Did you take any additional painkillers to those prescribed? If so, what & and how regularly?
- Discuss individual patient pain management goals in terms of ADLs, physical therapy, long term activity goals and a level of comfort that optimises healing.
- Consider delirium and possibility of over or under treatment in older adults.
- Discuss side effects with patients.
- Non-medical pain management techniques (cold therapy, relaxation, medication, self-massage).

12.4 Therapy on discharge

- Patients expected to return for follow-up physio sessions following discharge at a hospital closest to where they live.
- There should be a named physiotherapist contact at that hospital.
- There is a domiciliary physiotherapy service for patients who are unable to attend an outpatient department, or have specific functional goals to achieve in the home environment e.g. stairs practice if a patient went home to downstairs living.
- All patients will have a virtual review by physiotherapists within 2-3 weeks. Dependent on outcome of first physiotherapy review further appointments will be arranged and tailored advice given. The majority will not require routine post-operative rehabilitation.

12.5 Follow-up appointments:

At two weeks Outpatient review (surgical or advanced practitioners) to review clinical progress post-surgery as per local protocols with consultant support available.

At six weeks: Outpatient review with consultant
Patients may require further imaging of ankle.

At six months: Outpatient review with consultant. Patients completes PROMS data for BOFAS Registry (MOXFQ & EQ5D). For further imaging of ankle

Ankle fusion patients maybe discharged at this point if progress satisfactory

At one year: Outpatient review with consultant. Patients completes PROMS data for BOFAS Registry (MOXFQ & EQ5D). For further imaging

A process should be in place that can implement a 'patient initiated follow up' providing patients the means of self-accessing services if needed.

- 12.6 **All ankle replacement implants should be followed annually** for the first five years, two yearly to ten and three yearly thereafter.

13 Standards for good governance and efficiency metrics

13.1 It is critical that both clinical quality and efficiency is driven by clinicians with a consistency of approach across all clinical pathways. The metrics below should be regularly assessed.

13.2 There should be a clear policy to assess clinical harm including a root cause analysis if patients cannot be operated or followed up with in the nationally or professionally mandated RTT standard.

13.3 Governance and efficiency metrics

- Percentage of ankle arthritis patients opting for fusion/replacement benchmarked with National HES data
- Compliance with the National Joint Registry including high linkability.
- Six monthly review of NJR.
- Percentage use of ODEP 10A rated prostheses or prosthesis with a NJR proven similar track record.
- Evidence of MDT involvement in the use of any novel prosthesis or loan kit.
- Monitoring of any novel or modified implants (Beyond Compliance)
- Percentages of rate of arthroscopic and open fusion benchmarked with National HES data
- Rate of success of radiological ankle fusion at 6 months post-surgery
- Monitoring of additional procedures during primary surgery
- Emergency readmission within 30 days.
- Return to theatre.
- Percentage of procedures with infection.
- Surgical site infection rate (PHE and GIRFT surveillance projects)
- Length of stay metrics: Review action plans to target the top decile of LOS
- Audit of actual v/s expected discharge dates including weekend discharge rates.
- Documentation of clinician attendance at multidisciplinary team meetings.

- An annual transparent surgical review with all surgeons in a face to face setting.
- Individual clinical outcomes including volumes to be discussed using data from NJR, NCIP and BOFAS Registry during annual appraisals
- PROMS compliance and adjusted health gain on PROMS.
- Patient experience surveys (FFT).
- Interventions are evidence based on National Clinical criteria including NICE
- Audit of postoperative physiotherapy in the community (especially upper limb surgery).
- Review of litigation data.
- BOFAS are keen to offer a network of support and recommend strongly that surgeons performing ankle replacements should also enter their data on the BOFAS registry which collect PROMS (MOXFQ and EQ5D) and produces an annual report. This data is anonymised, 3 BOFAS outcomes committee members have access to named data and any surgeon displaying poorer PROMS can be offered support by the wider BOFAS community.

Efficiency Metrics

- Review of Model Hospital data
- Outpatient utilisation including virtual clinic usage
- Percentage of patients listed surgery at the first medical appointment.
- Average percentage of pre-operative outpatient appointments per patient.
- Average radiological investigations per patient.
- Equity of patient access standards:
 - Mean waiting times for the first appointment
 - Percentage of patients waiting for more than 18/52 and 52 weeks for surgery.
- Percentage of patients pre-assessed within six weeks of surgery.
- Patients on the day cancellations for non-clinical reasons.
- Percentage of theatre utilisation
- Prosthetic/equipment costs.
- Requirement of loan kit(s) required by the service and their costs.
- Average cost per procedure or Weighted activity unit.
- New to FU ratio.
- Training metrics (Specialty Registrars, junior doctors and nursing staff).

14 Recommendations for Transformation and Recovery

- 14.1 The Integrated Care System (ICS) should model the capacity they will generate by peer reviewing against the top decile and put systems in place to achieve this as soon as

possible. Savings generated from such efficiency should be put back in the ICS to support the continued development of the orthopaedic service.

- 14.2 The ICS should establish systems that improve communication between primary care networks and secondary care to streamline the pathway for patients.
- 14.3 In line with the NHS Long Term Plan the ICS should support virtual consultation where this improves patient convenience, specialist accessibility and eases clinical space shortages but not to the detriment of clinical care or training. Guidelines should be locally developed for face to face and virtual consultations with appropriate governance processes, training and infrastructure for video consultations developed. It is expected that the first consultation with the foot & ankle surgeon will be face to face due to the need to assess the patient having the benefit of nonverbal communication and the inclusion of family and friends, if desired, by the patient.
- 14.4 Networking of elective services into larger regionally based teams will build local resilience. It is recommended that the elective service is incrementally provided over 7 days where possible after taking into consideration issues of staff wellbeing and recruitment.
- 14.5 The ICS (or the region) should adopt one ICS PTL per sub speciality so intelligence can be developed on local demands and capacity and that patients can be offered surgery within nationally agreed standards.
- 14.6 The ICS (or the region) should consider a 'Clinician Passport' such that clinicians can move between hospitals. This will help clinicians to make use of any capacity within the system or region and maintain their surgical skills or professional development by being involved in the delivery of an optimum volume of procedures in the regional hub for instance TAR and revision surgery.
- 14.7 The ICS must improve IT communication between hospitals such that clinical data can seamlessly be transferred across remote sites
- 14.8 IT improvements will increase the opportunity for increased flexible working, including working from home as well as facilitating MDT meetings to reducing decision making time and shortening the clinical pathway.
- 14.9 The ICS should create COVID-19 protected elective surgery zones with regular patient and staff testing and use of appropriate PPE as per NHE and professional guidance.
- 14.10 To understand the true cost of a surgical procedure there should be a robust information system that provides accurate patient level costing by capturing data at the point of care, procedure time, cost analysis by procedure including prosthesis and all consumables, and live indication of available stock and automated reordering of consumable stock.
- 14.11 The ICS should procure at the system level or in a wider regional collaboration.

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Notes: