Worcestershire Acute Hospitals NHS Trust

2024 Enhanced Arthroplasty Patient Pathway (EAPP)

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

Introduction

Getting It Right First Time (GIRFT) is a national programme to improve the treatment and care of patients within the NHS by reducing unwarranted variations. Guidance has been taken from GIRFT document published 2023 on delivering perioperative ambulatory care to patients for hip and knee replacements. This ambulatory pathway will delivery safe effective primary hip and knee arthroplasty and the default is day 0 or day 1 discharge.

This guideline is for use by the following staff groups :

- **Anaesthetists**
- **Orthopaedic surgeons**
- **Ward nursing staff**
- **Physiotherapists**
- **Occupational Therapists**
- **Theatre teams**
- **Recovery staff**
- **Pre-operative assessment nurses**

Lead Clinician(s)

Lucy Leong	Consultant Anaesthetist, Anaesthetic Department
Cindy Persad	Consultant Anaesthetist, Anaesthetic Department
Approved by *Theatre, Anaesthetic Governance on*:	19th June 2024
Review Date: This is the most current document and should be used until a revised version is in place	19th June 2027

Key amendments to this guideline

Date	Amendment	Approved by:
June 2024	Teicoplanin with gentamicin added as first line antibiotic for elective arthorplasty	Theatre and Anaesthetic Governance June 2024
April 2025	Patients asked to bring audio device to listen to Haemocue check in recovery Local anaesthetic doses amended to 70kg patient	Theatre and Anaesthetic Governance April 2025

Introduction

This protocol is to be used for part of the enhanced arthroplasty patient pathway. It covers the exclusion criteria, pre-op drinks, anaesthesia and local anaesthetic (either regional blocks or infiltration), postoperative fluids prior to mobilisation and postoperative analgesia.

All Enhanced Recovery Programmes have 3 separate stages, pre operative, intraoperative and post operative.

Pre-operative preparation

1. Patients should be referred by their GP when all coexisting diseases have been reviewed and patients are established on optimum treatment regimes.

2. Pre-operative education for the patients is a key part of the enhanced recovery programme. All patients listed for joint arthroplasty should attend Pre-op assessment to ensure management of patient expectation. Information leaflets and educational videos will be highlighted for the patient. This will include information from all members of the multidisciplinary team. The patient should be told they are an active participant in their recovery process and rehabilitation.

3. Organisation of discharge arrangements should begin in the Pre-operative period

4. Patients will be admitted to the ward on day of surgery

5. Patients without diabetes will be provided with 2 x 200ml carton of Nutricia Preop to drink at 0600 on morning of surgery. Patients who will have their operation later in the day can have further cartons up to 2 hours preoperatively at the discretion of the Anaesthetist responsible for the patient. Please note that diabetic patients should continue with the current pre-operative fasting Trust guidelines. Sip till Send policy will be the default for all patients.

6. Patients will be asked to bring in an audio device and headphones during their surgery to enable them to listen to music, audio book or a podcast during the surgery.

7. Pain is expected and normal, mobilization is essential. All patients will receive a pain relief package that has been created to try and control your pain as well as possible. It starts on the day of the surgery and continues after your discharge.

Intra-operative steps

Set protocols for anaesthetic techniques are provided from page 4-8 for primary total knee and primary hip replacements. All patients will be included in the EAPP unless they are within the exclusion criteria.

Enhanced recovery techniques should aim to reduce intraoperative opiate requirement and provide adequate analgesia to enable early mobilisation. Avoid urinary catheterisation, aim for normovolaemia and avoid excessive fluid administration. Aim for normothermia with the use of warmed fluids and patient warming devices (Bair hugger). Thromboprophylaxis will be as per trust policy.

Post operative early physiotherapy is crucial for prompt mobilisation and improved functional outcomes. Patients should be encouraged by physiotherapists and ward staff to walk with assistance as soon as possible following surgery. There will be regular and effective analgesia and prompt introduction of enteral fluids and food. Independence with washing and dressing should be encouraged from the Day 0 post-operative day. All drains, catheters and drips should be minimised.

Post-operative steps
Discharge protocol is managed by the multidisciplinary team:

1. Physiotherapy and occupational health specialists deem the patient safe for discharge
   Range of motion for knees to be 0-70 degrees (less may be acceptable after discussion with the surgeon)

2. Post-operative X-rays have been reviewed and documented to be satisfactory by a senior member of the surgical team

3. All patients to have Post-operative haemaglobin to be checked in recovery with a haemacue. Routine Post-operative blood investigations will not be required for the standard primary hip or knee arthroplasty, ASA 1 or 2 patient, unless there has been excessive bleeding.

4. Minimal ooze from the surgical wound. Persistent ooze that requires an anticipated change of dressing within 24 hours should be brought to the attention of the surgical team.

5. Patients are safe and happy with the self-administering of drugs including anticoagulants.

When a patient meets all criteria they may be discharged regardless of the postoperative day. Patients must have clear instructions on rehabilitation process regarding exercises and mobility.

Contact details must be provided so that patients can speak to a member of the multidisciplinary team should any questions or complications arise following discharge home. The patients will be contacted by telephone, 1 week following discharge to assess progress.

Exclusion criteria:

- Severe cardiac or respiratory disease i.e. ASA 4
- Stage 4 Chronic Kidney Disease or ESRF (i.e. eGFR is <30ml/min)
- Revision Knee Replacements

ANAESTHETIC

Pre-warm patient on ward with blanket for 30 minutes on ward prior to transfer.

IV 1g Paracetamol
IV 40mg Parecoxib (unless contraindicated)
IV 1g Tranexamic acid
IV 800mg Teicoplanin (administered slowly) and 120mg Gentamicin (single dose intravenous). These antibiotics should be given separately and not allowed to mix.
Note reduced dose tecoplanin if less than 70kg - 600mg
IV 4mg Ondansetron
IV 9.9mg Dexamethasone

Spinal: avoid opiates (GIRFT recommendation)

Option A - if operation 90-120 mins
3.3-3.7ml ***0.25% plain racemic bupivacaine*** (NOT levobupivacaine, this will not work as effectively).

Option B if operation >120 mins
2.0-3.0ml 0.5% Heavy Marcain or 0.5% plain Bupivacaine.

During the procedure
Awake or with light sedation (propofol TCI).
Music is encouraged with headphones.
Avoid urinary catheter.

If General Anaesthetic required

Propofol, Fentanyl for induction
Anaesthesia maintained with Sevoflurane, oxygen and air (avoid nitrous oxide)
Further doses of Fentanyl for analgesia
Fluids aim for 1000ml crystalloid unless bleeding
Intermittent pneumatic calf compression to be used on the non-operative leg (Flotrons)

With either Spinal or GA: -

Motor sparing block- adductor canal block 20ml of 0.25% Levobupivacaine (50mg) and consideration of iPACK block with 20ml of 0.25% Levobupivacaine
or
Surgeon infiltration volume **up to** 150ml of 0.2% Ropivacaine (300mg) see below

TKR Surgical wound infiltration

Local anaesthetic is Ropivacaine 0.2% with 1 :200,000 adrenaline. To prepare this add 1mg Adrenaline to a 200ml bag of 0.2% Ropivacaine.

Maximum dose of Ropivacaine is 3mg/kg.

- For a 70kg patient the maximum dose is 105mls of 0.2% Ropivacaine.
- For a 100kg patient the maximum dose is 150mls of 0.2% Ropivacaine
-

Volume of Ropivacaine 0.2% with 1:200,000 adrenaline	Timing (TKR)	TKR
1st third (i.e. 35 mls if 70kg)	After preparation of articular surfaces	From the front of the posterior capsule at 3mm depth from right to left
2nd third (i.e. 35mls if 70kg)	After prosthesis and before tourniquet release	Deep tissues around the medial and lateral collateral ligaments
3rd third (i.e. 35mls if 70kg)	Prior to skin closure	In the subcutaneous tissue, perpendicular injections to the skin edges

Exclusion criteria: -
Severe cardiac or respiratory disease i.e. ASA 4
Stage 4 CKD or ESRF
Revision Hip Replacements

ANAESTHETIC

IV 1g Paracetamol
IV 40mg Parecoxib
IV 1g Tranexamic acid
800mg Teicoplanin (administered slowly) and 120mg Gentamicin (single dose IV). These antibiotics should be given slowly and not allowed to mix.
Note reduced dose tecoplanin if less than 70kg - 600mg
IV 4 mg Ondansetron
IV 9.9 mg Dexamethasone

Spinal avoid opiates (GIRFT recommendation)
Option A for surgery 90-120 mins
3.5-4 ml of **0.25% plain bupivacaine** (NOT levobupivacaine this will not be as effective)

Option B for surgery >120 mins
Preferably with 2.0-3.0 ml of 0.5% Heavy Marcain or 0.5% plain Bupivacaine

During the procedure
Awake or with minimal TCI sedation with Propofol 0.5-1.0mcg/ml
Music encouraged with headphones
Avoid urinary catheter
Intermittent pneumatic calf compression to be used on the non-operative leg (flowtrons)

If GA required
Propofol, Fentanyl for induction
Anaesthesia maintained with Sevoflurane, oxygen and air (avoid nitrous oxide)
Further doses of Fentanyl for analgesia

Fluids aim for 1000ml cystalloids unless bleeding

THR Surgical wound infiltration

Local anaesthetic is Ropivacaine 0.2% with 1 :200,000 adrenaline. To prepare this add 1mg Adrenaline to a 200ml bag of 0.2% Ropivacaine.

Maximum dose of Ropivacaine is 3mg/kg.
- For a 70kg patient the maximum dose is 105mls of 0.2% Ropivacaine.
- For a 100kg patient the maximum dose is 150mls of 0.2% Ropivacaine
-

Volume of Ropivacaine 0.2% with 1:200,000 adrenaline	Timing (THR)	THR

1st third (i.e. 35 mls if 70kg)	After acetabular component	Around the acetabular rim, exposed adductor and gluteus muscle
2nd third (i.e. 35mls if 70kg)	After femoral component	External rotators, gluteus tendon, iliotibial band
3rd third (i.e. 35mls if 70kg)	Prior to skin closure	In the subcutaneous tissue, perpendicular injections to the skin edges

2024 EAPP Total Knee and Total Hip replacements

Post-op Regimen

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Ensure compact 125ml drink in recovery (OK for well controlled diabetics)
If appropriate stop IV fluids in recovery and commence oral intake
Expect length of stay either Daycase or 1-night stay standard for all
** Pain is expected and normal, mobilization is essential
To mobilize once *motor* block has subsided
No hip precautions as standard
No further doses of antibiotics
1 further dose of tranexamic acid 1g PO 4 hour postoperative
For day-case joints Enoxaparin SC to be given on discharged or at 18:00
TED stockings during inpatient stay but no TED stockings required on discharge as standard
Bladder scan at 5 hours if urine is not passed. If urinary catheter needed, then intermittent catheter to be used.
If pain postop in recovery IV fentanyl 25mcg boluses prn
If pain postop on the ward 5-10mg oxycodone liquid 2-4 hrly or 10-20 oramorph 2-4 hrly

Post-op Medication during inpatient stay
(TTO for the anaesthetist to prescribe see page 9)

GFR>60

PO Paracetamol 1g QDS for 14 days
PO Ibuprofen 400mg TDS for 3 days (unless contraindicated)
PO Zomorph (modified release morphine) 10-20mg BD 4 doses only then stop N.B **First dose in recovery**
PO Oramorph 10-20mg PRN 2-4 hourly
PO Laxido 1 sachet BD for 14 days
PO Ondansetron 4mg TDS for 3 days
Stepdown to PO Codeine phosphate 30-60mg QDS or PO tramadol 50-100mg QDS (if codeine tolerant) for 12 days after completing 2 days of Zomorph
SC enoxaparin dose is weight dependent, for duration of treatment see below
1. Knees- 2 weeks 2. Hips- 4 weeks

GFR<60

PO Paracetamol 1g QDS for 14 days
PO Oxycodone modified release 5-10mg BD 4 doses only then stop. N.B **First dose in recovery**
PO Oxycodone liquid 5-10mg PRN 2-4 hourly
PO Laxido 1 sachet BD for 14 days
PO Ondansetron 4mg TDS for 3 days
Stepdown to PO Codeine phosphate 30-60mg QDS or PO tramadol 50-100mg QDS for 12 days after completed 2 days of Oxycodone MR
SC enoxaparin dose weight dependent, for duration of treatment see below
1. Knees- 2 weeks 2. Hips- 4 weeks

All morning operated patients to be mobilized in the afternoon.
Afternoon patients to be mobilized in the evening.
All patients to be mobilised within 1 hour of the spinal anaesthetic wearing off.

NB to consider dose reductions in those patients who weigh less than 50kg, frail and elderly.

TTO for anaesthetist to prescribe for day-case joints

PO Paracetamol 1g QDS 14 days
PO Ibuprofen 400mg TDS (avoid if CKD, cardiac impairment and history of GI haemorrhage or ulcers) 6 doses post op 2 days
PO Codeine 30-60mg QDS (use reduced dose for renal impairment) 14 days
If intolerant to codeine use PO tramadol 50-100mg QDS
FOR breakthrough pain only PO Morphine sulphate liquid (10mg/5ml) 10mg 4 hourly (6-8 hourly if renal impairment) 1 bottle (100 ml)
PO Laxido 1 sachet BD 14 days
PO Ondansetron 4mg TDS 3 days
SC Enoxaparin dose is weight dependent, for duration of treatment see below:
1. Knees- 2 weeks
2. Hips- 4 weeks for standard risk patient.

Monitoring

Page/ Section of Key Document	Key control:	Checks to be carried out to confirm compliance with the Policy:	How often the check will be carried out:	Responsible for carrying out the check:	Results of check reported to: *(Responsible for also ensuring actions are developed to address any areas of non-compliance)*	Frequency of reporting:
	WHAT?	**HOW?**	**WHEN?**	**WHO?**	**WHERE?**	**WHEN?**
	These are the 'key' parts of the process that we are relying on to manage risk. We may not be able to monitor every part of the process, but we MUST monitor the key elements, otherwise we won't know whether we are keeping patients, visitors and/or staff safe.	What are we going to do to make sure the key parts of the process we have identified are being followed? (Some techniques to consider are; audits, spot-checks, analysis of incident trends, monitoring of attendance at training.)	Be realistic. Set achievable frequencies. Use terms such as '10 times a year' instead of 'monthly'.	Who is responsible for the check? Is it listed in the 'duties' section of the Policy? Is it in the job description?	Who will receive the monitoring results? Where this is a committee the committee's specific responsibility for monitoring the process must be described within its terms of reference.	Use terms such as '10 times a year' instead of 'monthly'.

References

[You should include external source documents and other Trust documents that are related to this Policy]

Contribution List

Contribution List

This key document has been circulated to the following individuals for consultation;

Designation
Jo Marriot SCSD divisional medical director
Hugh Morton Consultant microbiologist
Keith Hinton Consultant Pharmacist

This key document has been circulated to the chair(s) of the following committee's / groups for comments;

Committee

Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and included as an appendix to key document when submitted to the appropriate committee for consideration and approval.

Please complete assessment form on next page;

NHS Worcestershire Acute Hospitals NHS Trust

Herefordshire & Worcestershire STP - Equality Impact Assessment (EIA) Form
Please read EIA guidelines when completing this form

Section 1 - Name of Organisation (please tick)

Herefordshire & Worcestershire STP		Herefordshire Council		Herefordshire CCG	
Worcestershire Acute Hospitals NHS Trust		Worcestershire County Council		Worcestershire CCGs	
Worcestershire Health and Care NHS Trust	✡	Wye Valley NHS Trust		Other (please state)	

Name of Lead for Activity	

Details of individuals completing this assessment	**Name**	**Job title**	**e-mail contact**
	Lucy Leong	**Consultant**	**l.leong@nhs.net**
Date assessment completed	**29/5/24**		

Section 2

Activity being assessed (e.g. policy/procedure, document, service redesign, policy, strategy etc.)	**Title:**			
What is the aim, purpose and/or intended outcomes of this Activity?	Improve LOS joint replacements and increase volume of cases done.			
Who will be affected by the development & implementation of this activity?	✓	Service User	❑	Staff
		Patient	❑	Communities
	❑	Carers	❑	Other _____
	❑	Visitors	❑	
Is this:	× Review of an existing activity ❑ New activity ❑ Planning to withdraw or reduce a service, activity or presence?			

What information and evidence have you reviewed to help inform this assessment? (Please name sources, eg demographic information for patients / services / staff groups affected, complaints etc.	
Summary of engagement or consultation undertaken (e.g. who and how have you engaged with, or why do you believe this is not required)	Charlie Docker Clincal lead orthopaedics
Summary of relevant findings	

Section 3

Please consider the potential impact of this activity (during development & implementation) on each of the equality groups outlined below. **Please tick one or more impact box below for each Equality Group and explain your rationale**. Please note it is possible for the potential impact to be both positive and negative within the same equality group and this should be recorded. Remember to consider the impact on e.g. staff, public, patients, carers etc. in these equality groups.

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
Age		Yes		
Disability		Yes		
Gender Reassignment		Yes		
Marriage & Civil Partnerships		Yes		
Pregnancy & Maternity		Yes		
Race including Traveling Communities		Yes		
Religion & Belief		Yes		
Sex		Yes		
Sexual Orientation		Yes		
Other Vulnerable and Disadvantaged Groups (e.g. carers; care leavers; homeless; Social/Economic		Yes		

Equality Group	Potential positive impact	Potential neutral impact	Potential negative impact	Please explain your reasons for any potential positive, neutral or negative impact identified
deprivation, travelling communities etc.)				
Health Inequalities (any preventable, unfair & unjust differences in health status between groups, populations or individuals that arise from the unequal distribution of social, environmental & economic conditions within societies)		Yes		

Section 4

What actions will you take to mitigate any potential negative impacts?	Risk identified	Actions required to reduce / eliminate negative impact	Who will lead on the action?	Timeframe
		.		
How will you monitor these actions?				
When will you review this EIA? (e.g in a service redesign, this EIA should be revisited regularly throughout the design & implementation)				

Section 5 - Please read and agree to the following Equality Statement

1. Equality Statement

1.1. All public bodies have a statutory duty under the Equality Act 2010 to set out arrangements to assess and consult on how their policies and functions impact on the 9 protected characteristics: Age; Disability; Gender Reassignment; Marriage & Civil Partnership; Pregnancy & Maternity; Race; Religion & Belief; Sex; Sexual Orientation

1.2. Our Organisations will challenge discrimination, promote equality, respect human rights, and aims to design and implement services, policies and measures that meet the diverse needs of our service, and population, ensuring that none are placed at a disadvantage over others.

1.3. All staff are expected to deliver services and provide services and care in a manner which respects the individuality of service users, patients, carer's etc, and as such treat them and members of the workforce respectfully, paying due regard to the 9 protected characteristics.

Signature of person completing EIA	Lucy Leong
Date signed	29/5/24
Comments:	
Signature of person the Leader Person for this activity	Lucy Leong
Date signed	29/5/24
Comments:	

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	Yes
2.	Does the implementation of this document require additional revenue	Yes
3.	Does the implementation of this document require additional manpower	Yes
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval.