
INITIATED BY: Trauma and Orthopaedics ERAS Task and Finish Group

APPROVED BY: Scheduled Care Group

DATE APPROVED: Under review

VERSION: 1 1.0

DATE FOR REVIEW: 3 years from date of approval or if any legislative or operational changes require

DISTRIBUTION:

FREEDOM OF INFORMATION STATUS: Open
Guidelines Definition
Clinical guidelines are systemically developed statements that assist clinicians and patients in making decisions about appropriate treatments for specific conditions.

They allow deviation from a prescribed pathway according to the individual circumstances and where reasons can be clearly demonstrated and documented.

Minor Amendments
If a minor change is required to the document, which does not require a full review please identify the change below and update the version number.

<table>
<thead>
<tr>
<th>Type of change</th>
<th>Why change made</th>
<th>Page number</th>
<th>Date of change</th>
<th>Version 1 to 1.1</th>
<th>Name of responsible person</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


CONTENTS

Guidelines Definition .................................................................i
Minor Amendments ...................................................................i
1. Introduction ........................................................................1
2. Aims of Enhanced Recovery After Surgery .........................1
3. Purpose of the ERAS Medication Guidelines .......................2
4. Medication Guidelines .........................................................3
5. References ...........................................................................10
1. Introduction

ERAS (Enhanced recovery after surgery) for Elective Orthopaedic Hip and Knee Replacement Surgery.

ERAS is a multi-modality, evidence based approach to improving the quality of patient care after surgery, with a selected number of individual interventions which, when implemented together, demonstrate a greater impact on patient outcomes.

The principles of ERAS include:

- Ensuring the patient is in the best possible condition for surgery
- Ensuring the patient has the best possible management during and after his/her operation
- Ensuring the patient experiences the best possible rehabilitation, enabling early recovery and discharge from hospital, allowing them to return to their normal activities quicker

Enhanced Recovery After Surgery is a patient-centered method of optimising surgical outcome by improving both patient experience and clinical outcomes. Appropriate medication management forms an integral part of the ERAS process.

2. Aims of Enhanced Recovery after Surgery

These guidelines support the work of the 1000 lives plus ERAS Orthopaedic collaborative and the subsequent How to Guide 2011 (How to Guide No. 18) (1) whilst acting as a resource to guide the multi-disciplinary staff involved in its delivery.
The effectiveness of ERAS to improve outcomes is dependent on the engagement, commitment and involvement of all members of the multi-disciplinary team at all stages of the patient’s journey, starting from the general practice surgery, continuing through the hospital stay and during recuperation in the patient’s own home.

All patients planned to undergo an elective hip or knee replacement should be included in the ERAS programme.

Please read these guidelines in conjunction with the ERAS T&O protocol for the Management of Enhanced Recovery T&O patients, the 1000 Lives Plus How to Guide No 18. ERAS (Hip and Knee arthroplasty) and the ERAS T&O Intervention Tool.

3. **Purpose and Scope of the ERAS Medication Guidelines**

Is to ensure that all staff groups working to deliver the ERAS package have an understanding of the medication regimes used to ensure the ERAS package of care is delivered. The aims are to:-

- Avoid prolonged starvation, ensure adequate hydration and nutrition
- Utilise multimodal analgesia allowing optimal analgesia, opioid sparing, ability to mobilise early, with minimal side effects.
- Rapid recovery from anaesthetic and a rapid return to normal cognitive and physical wellbeing.

These guidelines are intended for use by all staff groups involved in the prescribing, administering, supplying and monitoring of the medication used for patients under the ERAS Care Pathway.
4. Medication Guidelines

4.1 Pre Operative Management

Starvation times for surgery need be no longer than six hours for food and non-clear fluids and two hours for clear fluids and medication. This applies to the medication deemed necessary to be continued peri-operatively during either the pre-operative assessment or anaesthetic assessment.

Clear fluids are defined as fluids through which a newspaper can be read and include water, diluted fruit juices, and carbohydrate rich drinks such as Nutricia Pre op (2).

4.1.1 Regular Medication

Patient’s regular medication must be prescribed on the All Wales Medication Chart on admission to the elective surgical ward. The anaesthetist will assess the patient’s regular medication and indicate which medications are to be continued through the perioperative period, as per the Cwm Taf LHB Guidelines for the Perioperative Management of Medication in Adults (available on sharepoint).

4.2 Premedication

The patient should be instructed to drink the contents of two 200ml cartons of a carbohydrate rich drink (Nutrica Pre-op) between two to four hours preoperatively.

Premedication is to be administered with sips of clear fluid up to two hours before surgery.
Premedication should include:-

1. Gapabentin (300mg) orally stat
2. Paracetamol 1g orally stat
3. Ibuprofen 400mg or Naproxen 500mg stat (3)

This should be prescribed in the stat dose section of the All Wales Medication Chart.

If it is not possible to administer the preoperative medication orally prior to the procedure, then appropriate intravenous medication should be given intra-operatively.

The patient should be given their regular medication up to two hours pre-operatively with sips of clear fluid, if it has been highlighted that this should be continued throughout the perioperative period during pre-operative assessment or during the anaesthetic assessment.

4.3 Induction of Anaesthesia and Intraoperative Medication

4.3.1 Induction of Anaesthesia:
Dexamethasone 8mg should be administered as a slow intravenous injection following induction of anaesthesia in the anaesthetic preparation room.

4.3.2 Anaesthesia:

The following table illustrates the options available for anaesthesia. The choice of anaesthesia used will depend on the consultant anaesthetist, consultant surgeon and the patients preferences.

<table>
<thead>
<tr>
<th>Spinal</th>
<th>General anaesthesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyperbaric Bupivacaine 0.5% Calculated to the lowest dose possible. <strong>(low dose for rapid return of motor function post op recovery and avoids intraoperative hypotension)</strong></td>
<td>Use short acting opiates such as remifentanil alfentanil or fentanyl as opposed to morphine</td>
</tr>
<tr>
<td>Ketamine 0.3mg/kg administered intraoperatively (3)</td>
<td></td>
</tr>
</tbody>
</table>
+/- intrathecal morphine 150-300 micrograms or diamorphine 300-750 micrograms

Table 1. Illustrates different anaesthetic techniques available

4.3.3 Intraoperative Intravenous Medication:

It is recommended the following medications are administered intraoperatively as appropriate for the individual patient.

- Clonidine 1-2micrograms/kg as a slow iv injection (4,5)
- Magnesium Sulphate 10-20mmols in 500mls of compound sodium Lactate (Hartmans/ Ringer-Lactate) infused at a rate of 1000mls/hr (6-9)
- Tranexamic Acid 15mg/kg slow iv injection prior to surgery (10, 11).

4.3.4 Sedation if required:

Midazolam (if patient <65yrs of age) or Propofol TCI

4.3.5 Intraoperative Fluids:

Using a low dose spinal tends to negate the need for excessive fluid administration to treat hypotension. If fluids are required 1L Compound Sodium Lactate (Hartmans/ Ringer-Lactate) should be used in preference to sodium chloride 0.9% or glucose 5%. Fluids should be discontinued before returning to ward.

4.3.6 Local Infiltration:

Local Filtration analgesia is a technique employed for controlling postoperative pain (12-15). Levobupivicaine 0.125% is used within Cwm Taf LHB for local infiltration and can be used with or without the addition of adrenaline (16).

Local infiltration without adrenaline:-
Withdraw three 50ml syringes (150ml in total) for use from a 200ml bag of 0.125% levobupivacaine. The amount administered is calculated to a maximum safe dose, normally 100-150mls in total.
To make up the local infiltrate to include adrenaline:-
Add 1 mg of adrenaline to a 200ml bag of 0.125% levobupivicaine. This will give you a solution containing levobupivicaine 0.125% + adrenaline 1:200 000 (5 micrograms/ml) (16,17).
Withdraw three 50ml syringes (150ml in total) for use. The amount administered is calculated to a maximum safe dose, normally 100-150mls in total (12-15, 18 and 19).

4.4 Postoperative Medication
Postoperative analgesia should be discussed with the patient during the anaesthetic review. When making the decision as to what postoperative analgesia a patient should receive, the following should be taken into account:-
- Patients allergy status
- Patients regular analgesia prior to admission
- Renal function
- Possible interactions with the patient regular medication
- Patients beliefs and concerns

Patients should be scored on their levels of pain on a regular basis post-operatively. The following paragraphs are a guide as to what medications should be prescribed postoperatively.

4.4.1 Regular Analgesia
One of the main aims of ERAS is to encourage early mobilisation. For this reason the use of Patient Controlled Analgesia (PCA) is discouraged. If PCA is deemed to be the most appropriate form of post-operative analgesia for a particular patient, for example, if a patient is unable to
tolerate/ absorb medication via the oral route, then it should be reviewed and discontinued at the earliest opportunity.

The following medications should be prescribed on the ‘regular medication’ section of the All Wales In-Patient Medication Administration Chart as appropriate for each patient: -

- **Paracetamol 1g qds po/iv.** The iv route should be reviewed at the earliest opportunity and switched to po as soon as the patient can swallow medication. (Local Health Board (LHB) Pharmacists can discontinue IV Paracetamol using the LHBs Pharmacist Enabling policy) NB. If the patient is <50kg, iv paracetamol should be dose on weight 15mg/kg every 4-6 hours, max 60mg/kg daily.

- **Ibuprofen 400mg tds or naproxen 500mg bd** (If NSAIDS tolerant – i.e. no recent history of NSAID induced asthma, GI problems; renal impairment or heart failure. See Cwm Taf LHB Guidelines on the prescribing of NSAIDs for further information)

- **Oxycontin MR 10mg bd po for 2 days only.** (5mg bd in >80 years/renal impairment (eGFR < 30mL/min).

- **Gabapentin 300mg-600mg po nocte for 2 days only.** (100 mg nocte in >70 years) (Omit in severe renal impairment ))

Patient’s analgesia requirements should be monitored regularly. Once patients have received up to 2 days of Oxycontin they should be prescribed suitable step-down analgesia. The choice of which will depend on patient choice and previous analgesia used prior to surgery. The following would be suitable choices: -
- Co-codamol 30/500 1 to 2 tablets qds (Regular paracetamol must be crossed off the chart)

- Codeine 30mg 1 to 2 tablets qds (In conjunction with regular paracetamol)

- Tramadol 50mg-100mg qds (In conjunction with regular paracetamol)

- Co-dydramol 10/500 1 to 2 qds (Regular paracetamol must be crossed off the chart)

Patients on regular opioid analgesia should also be prescribed regular laxatives. See section below for suitable choices.

**Chronic pain patients**

Patients with chronic pain should maintain their normal pain medication. Additional analgesia should be provided in line with the principals outlined above. Treatment will be need to be individualised by the Anaesthetic clinician, and if necessary advice sort from the pain team and/or Chronic pain specialists.

**Sleep apnoea patients**

Patients with sleep apnoea may benefit from an opiate sparing technique. The requirement for admission to the High Dependency Unit (HDU) must assessed by the anaesthetist in conjunction with the intensivist on duty. Patients on home Continuous Positive Airways Pressure (CPAP) should be asked to bring their own CPAP device into hospital on admission, therefore potentially negating the need for a HDU bed postoperatively.
4.4.2 Other regular medication

- Ondansetron 8mg bd iv/ po for **2 days only**.
- Regular thromboprophylaxis as per the Cwm Taf LHB/ 1000 Lives Thromboprophylaxis Guidelines for Orthopaedic Surgery.
- Senna 2 tablets nocte plus magnesium hydroxide suspension 10ml bd.

4.4.2 When Required Medication

The following medication should be prescribed on the ‘As and When required’ Section of the All Wales Medication Administration Chart.

- Oxynorm 5-10mg Max 2 hourly po *(To be reviewed daily and frequency decreased or crossed off chart if patient not requiring)*
- Ondansetron 4-8mg po Max bd *(Once crossed off regular side of chart after day 2)*
- Cyclizine 50mg po tds
- Naloxone 100 - 200 micrograms iv stat, then 100 micrograms every 2 minutes, up to a total maximum of 400 micrograms. RR <8 breaths per minute.

4.4.3 Medication on Discharge

- Patients should not be discharged on Oxycontin, Oxynorm or gabapentin unless they were on these medications prior to admission, or,
- They have been recommended to be continued on discharge by the Acute Pain Team.
- A TTH should be written for the patient at least 24 hours in advance.
• The prescriber should discuss the patient’s requirements for analgesia and the patient’s existing supply of analgesia before prescribing further supplies on the TTH.
• The patients regular medication should only be prescribed on the TTH if changes have been made to the medication whilst the patient was an in-patient, or if the patient has less than 7 days supply in total on discharge, including further supplies they may have at home.
5. References


(2) Perioperative fasting in adults and children; An RCN guideline for the multidisciplinary team November 2005.

(3) http://www.medicine.ox.ac.uk/bandolier/booth/painpag/Acutrev/Analgesics/celeacute.html


Guidelines V1.


