

1. Introduction and Who Guideline applies to

- 1.1 Ever since the first published report of the use of intrathecal morphine (combined with cocaine) in 1901, the use of spinal opioids for pain management has been recognized as an effective method of perioperative pain management. It remains an attractive choice of analgesic technique due to its speed, ease and relatively lower risk of technical difficulty and failure.(1)
- 1.2 In the past 40 years much scientific effort and debate have focused on the identification of opioids deemed suitable for administration via the intrathecal route in addition to the depiction of a pharmacokinetic model that correlates with and explains the observed clinical effects.
- 1.3 The use of intrathecal opioids could result in developing common opioid side effects. These include pruritus, urinary retention, nausea and vomiting, with particular emphasis and concern about the possible development of delayed respiratory depression. (2) It has been used over a wide range of procedures ranging from TURP to cardiothoracic surgery.
- 1.4 Equally, an extensive amount of research has revolved around the optimum dose of intrathecal morphine. In the literature, doses vary from as little as 50 *microgram* to 4000 *micrograms* with duration of action that can extend up to 18-24 hours. There is evidence of a better analgesia and morphine sparing effect in patients undergoing general surgical procedures scheduled to receive systemic opioids compared with patients undergoing cardiovascular procedures (3). This includes laparoscopic colorectal surgery (4).
- 1.5 This guideline applies to all Anaesthetists/ Registered Medical Staff who administer spinal opiates
- 1.6 This guideline applies to all nursing staff who are required to monitor patients after this has been administered – no nurse should administer this drug

2. Guideline Standards and Procedures

2.1 Medication to be used

Morphine/ Diamorphine

It is common practice across UHL to use a standard Diamorphine dose of 300 microgram intrathecal in addition to local anaesthetic in patients undergoing Caesarean sections as per NICE guidance.

There is, however, relative paucity in trials and guidelines on diamorphine dosage compared with morphine. Intrathecal diamorphine doses ranging from 250 *micrograms* to 2.5 milligrams in patients undergoing total knee arthroplasty have been reported (6). Lower doses of 250 *micrograms* and 500 *micrograms* have been compared in a trial in major orthopaedic surgery. Both provided a longer period of analgesia with no statistical difference observed between them (7). More recently, there are reports of the use of lower doses for abdominal surgery such as 300 *micrograms* for patients undergoing total abdominal hysterectomy (8). The preference in the UHL Trust is to use Morphine. If morphine is to be used it must be preservative free. This has to be confirmed visually and verbally before use.

Low dose Morphine intrathecal added to LA for regional	Moderate dose Morphine intrathecal associated with GA	High dose Morphine intrathecal associated with GA
<ul style="list-style-type: none">• TURP surgery: 50 <i>micrograms</i>• Caesarean section: 100 <i>micrograms</i>• Hip replacement: 100 <i>micrograms</i>• Knee replacement: 200 <i>micrograms</i>	<ul style="list-style-type: none">• Abdominal hysterectomy (plus LA): 200 <i>micrograms</i>• Abdominal colon surgery: 300 <i>micrograms</i>• Spinal surgery: 400 <i>micrograms</i>	<ul style="list-style-type: none">• Thoracotomy surgery: 500 <i>micrograms</i>• AAA surgery and cardiac surgery: 7–10 <i>micrograms/kg</i>

Caution and special attention should be exercised in:

- Age > 80
- Respiratory disease
- Raised BMI
- Liver and Renal Impairment
- Patients already on opioid therapy.

2.2 Indications for use.

Examples of Indications for spinal morphine/ diamorphine:

- Surgery where patients are likely to experience moderate to severe pain in order to reduce postoperative opioid requirements
- Where there is doubt that the patient could not manage PCA properly or where avoidance of PCA is desirable
- Clinical examples across LGH include major lower limb orthopaedic surgery, caesarean sections, urologic, HPB, and general surgery procedures whether open or laparoscopic.

Contraindications:

- Patient refusal
- General contraindications to regional anaesthesia e.g. coagulopathy, localised infection
- Severe pulmonary disease such as severe COPD with history of type II respiratory failure, daily use of steroids, and / or oxygen saturation less than 95% on room air before surgery.(5)
 - Patients who are unable to give informed consent.
 - Any patient that is known to be allergic to local anaesthetic.

2.3 Patient Care Considerations including management of side effects

The following guidelines for routine management of patients given spinal morphine/ diamorphine should apply:

- a) Must be given only by appropriately trained or supervised anaesthetist
- b) If using Morphine, only preservative-free morphine should be given intrathecal Morphine HCl, 1mg /1ml concentration.
- c) The dose and time of spinal morphine/ diamorphine must be documented on the patients eMEDS prescription and the specific box on the spinal morphine chart.
- d) All patients should be prescribed oxygen.
- e) A urinary catheter is recommended to avoid urine retention or incontinence embarrassment until mobility is restored.
- f) Drug prescription

- Oxygen PRN
 - Paracetamol 1 gram QDS PO/IV regularly.
 - NSAID's preferable Naproxen 500 mg BD PRN unless contraindicated:
 - Asthma sensitive NSAID's
 - Renal impairment
 - Dehydration
 - GIT causes e.g. ulceration, inflammatory bowel disease
 - Caution with geriatric patients
 - Actual or potential coagulopathy
 - Tramadol 50-100 mg PO/IV every 6 hours on the PRN side of eMEDS prescription. Maximum 400 mg/day unless contraindicated.
 - Naloxone to be given in increments of 100 *micrograms IV* as detailed below.
 - Antiemetic's of different groups on the PRN side of eMEDS prescription.
- g) Nausea and vomiting should be treated expectantly in high risk patients with standard anti-emetic agents. Regular anti-emetics should be considered in these patients

2.4 Patient Monitoring

Correct and careful monitoring of these patients is necessary to ensure they have adequate pain relief, but do not experience any side effects Observations of pain, respiratory rate, blood pressure, pulse, and pain score and sedation should be recorded hourly for 24hrs to observe for any signs of opiate toxicity. These observations should be recorded with date and times on the dedicated observation chart.

The patient must have a patent intravenous cannula at all times

The observations should be recorded on the specific Spinal Opioid Administration chart, one hourly for 24hrs after the first administration of spinal opiates

- * minute respiratory rate
- * minute pulse rate
- * non-invasive blood pressure as usual
- * pain score and sedation score
- * Oxygen saturation levels

2.5 Use of Further opiates

Oral Opiates including Codeine, Tramadol and Oramorph

Codeine 30mg 6 hourly or Tramadol 50 – 100mg 6 hourly can be started immediately. They can either be prescribed regularly or on a PRN basis depending on preadmission prescription.

Oramorph 10mg 2-4 hourly could be prescribed and started immediately unless the patient is on a Morphine or Fentanyl PCA in which case can be started only after discontinuation of the PCA.

These oral opiates can be prescribed for surgical post-operative pain relief.

Use of Morphine Patient Controlled Analgesia

Postoperatively, patients could be prescribed a standard PCA morphine , 1mg every 5 minutes. For more details, please see detailed Guideline for use of Intravenous Morphine PCA (Patient Controlled Analgesia).

Our UHL standard regimen is recommended provided that:

- Supplemental oxygen
- Monitoring
 - Are carried out according to the recommendations above.
- Dilution: Morphine 1 mg/ml
- Bolus: 1mg
- Lockout period: 5 min
- No background infusion. (9)
 - This can be started immediately postoperatively.
 - Caution should be taken with the added use of an IV Morphine PCA, use only when absolutely necessary.

2.6 Possible side effects and problems with recommended plan of action

Problem	Goal	Management
Inadequate pain relief	Pain score <4	If after administration of regular analgesia, PRN analgesia such as Tramadol and NSAID , and if appropriately using PCA → contact the acute pain team or on call anaesthetist if out of hours
Potential side effects.	Early detection and prompt management	For 24 hours, assess and document 2-hourly sedation and nausea / vomiting scores, respiratory rate, pulse, B/P

		and oxygen saturation
I. Respiratory rate <8/min +/- sedation score 2-3.	Respiratory rate >12/min Sedation score 0-1.	Give oxygen 15 litres/min, monitor oxygen saturation levels and give IV Naloxone in 100 microgram increments every 1 to 2 minutes up to a maximum dose of 2 milligrams or until sedation score 0-1 and respiratory rate >12/min. Call acute pain team or on call anaesthetist if out of hours
II. Oxygen saturations <94%.	Oxygen saturations >94%	Give oxygen 15 litres/min. If oxygen saturation has not improved after 5 min Call acute pain team or on call anaesthetist if out of hours
III. Nausea and vomiting.	Early detection of nausea and prevention of vomiting.	Administer the prescribed antiemetics as per protocol for postoperative nausea and vomiting
IV. Pruritis		<ul style="list-style-type: none"> Chlorphenamine : <i>orally</i> 4-6mg 4-6 hourly (maximum 24 mg/ 24 hours or 12 mg in elderly) should be offered <i>IV</i> 10 mg QDS maximum If severe treat with Naloxone after consulting on call Anaesthetic Registrar
V. Urinary retention.		If the patient has not passed urine for 12 hours postoperatively and is complains of pelvic discomfort, contact medical staff. Urethral catheterization may be necessary if not already done.

3. Education and Training

- 3.1 All medical staff who take on the role of administration of spinal opiates should be competent to do so
- 3.2 The Ward Sister / Charge Nurse for clinical areas where patients will be monitored will be responsible for ensuring staff are aware of these guidelines and the monitoring requirements for their patients

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
eMEDS prescription for relevant patients.	Audit is incorporated into the charts to check compliance.	Acute Pain Nurse.	On ward rounds every day. Incidents reported on Datix.	Reports shared at the Inpatient Pain Operational Group Meetings every 3 months. Lead Clinician for ITAPS will raise concerns, issues and share with CMG.

5. Supporting References

1. Bujedo BM. A Clinical Approach to Neuraxial Morphine for the Treatment of Postoperative Pain.
2. Rathmell TP, Lair TR, Nauman B. The Role of Intrathecal Drugs in the Treatment of Acute Pain. *Anesth Analg.* 2005;101:S30 –S43
3. Meylan N, Elia N, Lysakowski C, Tram`er MR. Benefit and risk of intrathecal morphine without local anaesthetic in patients undergoing major surgery: meta-analysis of randomized trials. *Brit J Anaesth.*2009;102 (2): 156–67.

6. Key Words

List of words, phrases that may be used by staff searching for the Guidelines on PAGL.
Spinal, Intrathecal, pain, morphine

CONTACT AND REVIEW DETAILS	
Guideline Lead (Name and Title) Dr E Jonck	Executive Lead Medical Director June 2021
<p>Details of Changes made during review: Referrals to Drug Chart has been replaced with 'eMEDS Prescription' Changes made and specific referral to the separate Guidelines for IV Morphine PCA. Add that caution should be used when using Morphine PCA when patient has had Spinal Morphine. 2.1 Medications to be used – Different surgical procedure are mentioned under this section, including Caesarean Section. I am not changing this as it includes different types of surgical procedures in the use of Spinal Opiates. Chlorpheniramine is the drug of choice to be used for pruritus in the UHL Trust, more effective will be the use of Naloxone but this will leave the patient in pain. LA Toxicity has been removed from this guideline.</p>	