



# Intrathecal (Spinal) Morphine Guidelines – Adult

Procedure Number

CHC-PM-0006

Version Nos:

1

## 1. Introduction

### Benefits

Intrathecal morphine (ITM) can provide significant safe analgesia for at least 12 hours and up to 24 hours if used as suggested below.

### Patient Selection

ITM is relatively contraindicated in patients with a known history of postoperative nausea and vomiting. ITM should not be used in patients with known sensitivities to morphine and/or advanced respiratory disease, obstructive sleep apnoea, and those already receiving high dose opioids or central nervous system depressants.

The risk of serious respiratory depression requiring intervention is low. It is increased with increasing patient age and ASA (anaesthetic risk classification) states. In this regard, ITM is no different from opioids given by other routes (although ITM respiratory depression may be more prolonged). ITM may be particularly useful for frail patients instead of an epidural with less haemodynamic disturbance.

### Surgery

ITM via the lumbar spine can provide analgesia for surgery to the thorax, abdomen or lower limbs. ITM has been found to be particularly useful after total hip replacement, total knee replacement and laparotomies for frail, elderly patients. It is usually not appropriate for uncomplicated surgery (eg. # NOF, TURP, etc).

### Dose

**The recommended dose given by the anaesthetist is 0.1 – 0.2 mg (100 – 200 mcg).**

This may be increased up to 0.3 mg (300 mcg) in some cases. As with systemic morphine, the risk of side effects increases with increasing doses.

**NB:** Intrathecal morphine is available at Grey Hospital in a syringe containing 200mcg in 0.4ml. These have been sterilized after production and are double bagged therefore the syringe and the innerbag can be dropped on to a sterile surface without compromising sterility.

### Administration

The onset of ITM is 30 – 60 minutes, so in most cases ITM will be given by the anaesthetist immediately prior to surgery. In some cases the addition of 25 mcg of intrathecal Fentanyl plus Bupivacaine 0.5% 1 – 2 mls will provide analgesia within 10 minutes for 2 – 4 hours.

### In recovery

Initially there may be pain issues, in which case the preferred rescue opioid analgesic is **Fentanyl**.



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### 2. Procedure

#### 1.00 Patient Controlled Analgesia (PCA) Prescription

Most patients receiving ITM also have postoperative patient controlled analgesia (PCA) prescribed by the Anaesthetist.

- For the first 24 hours the PCA prescription is limited to a maximum bolus of 1 mg of morphine with a maximum hourly total of 5 mgs of morphine
- Background (basal) infusions via the PCA are not to be prescribed.
- The Anaesthetist will review the PCA prescription thereafter on a daily basis.
- Fentanyl PCA may be used with a maximum hourly total of 150 mcg per hour.

#### 2.00 Labelling

The Anaesthetist documents on the PCA Prescription sheet and the anesthetic record, the time and the amount of ITM used.

The Anaesthetist or a delegated member of the medical/surgical team will inform the Recovery staff during handover in the PACU that ITM has been administered.

The Recovery staff place a purple ‘Spinal Morphine’ label in the designated space on the PCA Prescription sheet.

Steps	Action
1	All ITM patients have additional O2 (minimum 2 L/min via nasal cannula) for the first 24 hours as prescribed by the anaesthetist.
2	<b>All ITM patients are limited to 5 mgs per hour of PCA morphine or 150 mcgs per hour of PCA fentanyl.</b>
3	Hourly respirations, sedation score and continuous SaO <sub>2</sub> for <b>18 hours</b> after ITM are completed and recorded on the PCA Recording Sheet. Other routine PCA monitoring recordings are documented as usual.
4	After 18 hours if sedation score is 0 or 1, AND respirations are greater than 12 / minute, then 4 hourly observations are rrecorded.
5	If patient unrousable (sedation score = 3) and/or respirations are less than 8 per minute, give Naloxone 0.1 mg IV stat and repeat every 3 minutes until patient is rousable and breathing. Document Naloxone dose(s) on back page of PCA Prescription Sheet. Administer O2. Call H/S and Anaesthetist.
6	For those patients who have had ITM but do not have a PCA insitu, a spinal morphine label will be attached to the PCA prescription sheet and signed by the anaesthetist. The emergency treatment for side effects can then be accessed. The hourly respirations, sedation score and SaO <sub>2</sub> for <b>18 hours</b> as above will be recorded on the PCA Recording Sheet.
7	All patients who have had ITM must have a <b>ITM poster</b> at the head of the bed for easy identification.



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### **3.00 Intrathecal Fentanyl**

Intrathecal Fentanyl has been used in spinal anaesthetics safely for years. It has few significant side effects. The duration of analgesic effect is between 80 and 130 minutes when 25mcg is used. Cases of early respiratory depression (occurs within 2hrs of injection) have been reported; however the incidence is very rare. No cases of delayed respiratory depression (occurs after 2hrs of injection) have been reported. Pruritus, nausea and vomiting are relatively common side effects.

### **4.00 Adverse Effects**

#### **4.01 Respiratory depression**

All opiates can cause respiratory depression depending on how much is given and the route of administration. Intrathecal morphine has a particular time-line for respiratory depression related to the circulation of cerebrospinal fluid (CSF), and the water solubility of morphine. The time of most risk is at 12 to 16 hours after administration which is why close observations are needed for the first 18 hours. The respiratory depression will be reversed by Naloxone (Narcan) given intravenously or intramuscularly.

#### **4.02 Inadequate Pain Relief**

Intrathecal morphine takes some time to start working (2-3 hours), which means a patient may be in pain after a short surgical procedure. Intravenous opiates need to be used in PACU until the intrathecal morphine has achieved maximal effect. Fentanyl boluses are probably the best option to treat the pain in PACU. The intrathecal morphine analgesia can wear off after just 12 hours, which is why it is important to have a PCA prescribed for the patient – morphine PCA with a reduced hourly limit (5 milligrams).

#### **4.03 Hypotension – 15 – 33%**

Hypotension is one of the most frequent side effects of spinal anesthesia. Hypotension during spinal anesthesia results principally from the preganglionic sympathetic blockade. Systemic vascular resistance decreases as a result of a reduction in sympathetic tone of the arterial circulation. This leads to peripheral arterial vasodilatation the extent of which depends on the number of spinal segments involved. The patients blood pressure should improve with 0.9% NaCl fluid challenge and Ephedrine. If no response call House Surgeon and Anaesthetist to review patient.

#### **4.04 Nausea and vomiting – 30%**

Nausea and vomiting can be caused by most analgesics and morphine via the spinal route is no different. Mild nausea and vomiting will respond to the usual anti-emetics but severe vomiting will need the administration of Naloxone (Narcan).

#### **4.05 Pruritis (itching) – 30-60%**

Itchiness across the chest and abdomen is often caused by any opiate given via the intrathecal route. For mild itch the use of antihistamines works well (Phenergan) but if the itch is severe then Naloxone (Narcan) will treat the symptoms. **Notify anaesthetist prior to any treatment for this.**



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### 4.06 Mental Status Changes

Sedation, the most common mental status change following intrathecal morphine. The degree of sedation appears to be related to the dose of morphine administered. Central nervous system depression may be profound and coma has been described. Any time sedation occurs following intrathecal administration of morphine respiratory depression must be suspected. Mental status changes other than sedation may also occur after intrathecal morphine. Naloxone reversible paranoid psychosis and catatonia have been reported; euphoria, anxiety, and hallucinations may also occur. If mental status changes occur contact the house surgeon and anaesthetists to review the patient.

### 4.07 Urinary Retention – about 60%.

Prophylactic catheterisation is recommended.

## 3. Associated Documents

PCA Prescription and Recording Sheets  
Anaesthetic record  
'Spinal Morphine' labels (available in PACU)  
Laminated ITM poster at bedhead

## 4. References

Canterbury District Health Board Department of Nursing  
Chaney, M.A. (1995) *Side effects of Intrathecal and Epidural Opioids*.42:10/pp891-903

## Suggested Examples for mixing Naloxone for Respiratory Depression and Pruitis and Ephedrine for Hypotension

Naloxone is available as 400 mcg in 1 ml ampoule

### Respiratory Depression

Draw up 400 mcgs in a 5 ml syringe.  
Mix with 3 mls 0.9% NaCl . Total volume will be 4 mls.  
This will give you an end result of 1 ml = 100mcgs naloxone  
Label with red additive label.

### Pruitis

Draw up 400 mcgs of Naloxone into a 20 ml syringe.  
Add 19 mls of 0.9% NaCl. Total volume will be 20 mls.  
This will give you an end result of 1 ml = 20 mcgs naloxone  
Label with red additive label.



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Ephedrine is available as 30 mgs in 1 ml ampoule

### **Hypotension**

Draw up 30 mgs of Ephedrine in 10 ml syringe.

Add 9 mls of 0.9% NaCl. Total volume will be 10 mls.

This will give an end result of 1 ml = 3 mgs ephedrine

Label with red additive label.