**Indications**

Severe pain (like 20 mg/mL oral solution concentration should only be used in opioid-tolerant patients). Management of moderate to severe chronic pain in patients requiring use of a continuous around-the-clock opioid analgesic for an extended period of time (extended/sustained-release). Pulmonary edema. Pain associated with MI.

**Action**

Binds to opiate receptors in the CNS. Alters the perception of and response to painful stimuli while producing generalized CNS depression.

**Therapeutic Effects:**

Decrease in severity of pain. Addition of naltrexone in Embeda product is designed to prevent abuse or misuse by altering the formulation. Naltrexone has no effect unless the capsule is crushed or chewed.

**Pharmacokinetics**

**Absorption:** Variably absorbed (about 30%) following oral administration. More reliably absorbed from rectal, subcut, and IM sites. Following epidural administration, systemic absorption and absorption into the intrathecal space via the meninges occurs.

**Distribution:** Widely distributed. Crosses the placenta; enters breast milk in small amounts.

**Protein Binding:** Premature infants: 20%; Adults: 35%.

**Metabolism and Excretion:** Mostly metabolized by the liver. Active metabolites excreted renally.

**Half-life:** Premature neonates: 10–20 hr; Neonates: 7–6 hr; Infants: 1–5 mos: 6.2 hr; Children: 6 mos–2 yr: 2.9 hr; Children: 3–6 yr: 1–2 hr; Children: 6–19 yr with sickle cell disease: 1.3 hr; Adults: 2–4 hr

**TIME/ACTION PROFILE (analgesia)**

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PO</td>
<td>unknown</td>
<td>60 min</td>
<td>4–5 hr</td>
</tr>
<tr>
<td>PO-ER</td>
<td>unknown</td>
<td>3–4 hr</td>
<td>8–24 hr</td>
</tr>
<tr>
<td>IM</td>
<td>10–30 min</td>
<td>30–60 min</td>
<td>4–5 hr</td>
</tr>
<tr>
<td>Subcut</td>
<td>unknown</td>
<td>20 min</td>
<td>5–8 hr</td>
</tr>
<tr>
<td>Rect</td>
<td>unknown</td>
<td>20–60 min</td>
<td>3–7 hr</td>
</tr>
<tr>
<td>IV</td>
<td>rapid</td>
<td>20 min</td>
<td>6–9 hr</td>
</tr>
<tr>
<td>Epidural</td>
<td>rapid</td>
<td>6–30 min</td>
<td>1 hr</td>
</tr>
<tr>
<td>IT</td>
<td>rapid (min)</td>
<td>unknown</td>
<td>up to 24 hr</td>
</tr>
</tbody>
</table>

**Contraindications/Precautions**

**Contraindicated in:** Hypersensitivity; Some products contain tartrazine, bisulfites, or alcohol and should be avoided in patients with known hypersensitivity; Acute, mild, intermittent, or postoperative pain (extended/sustained-release); Significant respiratory depression (extended/sustained-release); Acute or severe bronchial asthma (extended/sustained-release); Paralytic ileus (extended/sustained-release). Use Cautiously in: Head trauma; q intracranial pressure; Severe renal, hepatic, or pulmonary disease; Hypothyroidism; Seizure disorder; Adrenal insufficiency; History of substance abuse; Undiagnosed abdominal pain; Premature infants. Patients undergoing procedures that capsule (surgical, radiation), long acting agents should be discontinued 24 hr before and replaced with short-acting agents. Geriatric or debilitated patients (dose suggested); OB, Lactation: Avoid chronic use; has been used during labor but may cause respiratory depression in the newborn; Pedi: Neonates and infants: 3 mos (more susceptible to respiratory depression). Pedi: Neonates (oral solution contains sodium benzoate which can cause potentially fatal gasping syndrome).

**Adverse Reactions/Side Effects**

**CNS:** Confusion, sedation, dizziness, hallucinations, respiratory depression. **EENT:** Blurred vision, diplopia, miosis. **Resp:** Respiration depression. **CV:** Hypotension, bradycardia. **GI:** Constipation, nausea, vomiting. **GU:** Urinary retention. **Derm:** Pruritus, sweating. **Misc:** Physical dependence, psychological dependence, tolerance.

**Interactions**

<table>
<thead>
<tr>
<th>Class</th>
<th>Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antidepressants</td>
<td>Venlafaxine</td>
<td>Increase miosis, respiratory depression</td>
</tr>
<tr>
<td>Alpha-Adrenergic Blockers</td>
<td>Prazosin</td>
<td>Hypotension</td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Diphenhydramine</td>
<td>Decrease sedative effects</td>
</tr>
<tr>
<td>Beta-Adrenergic Blockers</td>
<td>Propranolol</td>
<td>Increase respiratory rate, decrease cardiovascular depression</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>Fructose, Glucose</td>
<td>Increase risk of hypoglycemia</td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>Prednisone</td>
<td>Increased risk of respiratory depression</td>
</tr>
<tr>
<td>Cyclosporine</td>
<td>Cyclosporine</td>
<td>Increased risk of renal toxicity</td>
</tr>
<tr>
<td>Diuretics</td>
<td>Furosemide</td>
<td>Increased risk of hypotension</td>
</tr>
<tr>
<td>MAOIs</td>
<td>Phenelzine</td>
<td>Increased risk of hypertensive crisis</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>Ibuprofen</td>
<td>Increased risk of gastrointestinal bleeding</td>
</tr>
<tr>
<td>Opiates</td>
<td>Fentanyl</td>
<td>Additive respiratory depression</td>
</tr>
<tr>
<td>Sedatives</td>
<td>Chlorpromazine</td>
<td>Increased drug effects</td>
</tr>
<tr>
<td>Thyroid Hormones</td>
<td>L-thyroxine</td>
<td>Increased risk of thyrotoxicosis</td>
</tr>
</tbody>
</table>

**Notes**

- Use only with appropriate monitoring of respiratory depression.
- Avoid use in patients likely to experience prolonged respiratory depression (e.g., children with sickle cell disease).
- Be aware of the potential for abuse or misuse, especially in patients at high risk.
- Store in child-resistant containers.
- Discontinue all opioids in the event of respiratory depression.

**Dosing**

- **Adults and Children:** Start low and titrate up as needed.
- **Infants and Children:** Use with caution and monitor closely.
- **Pediatric Patients:** Use with caution and monitor closely.

**Overdose**

- **Overdose Management:** Symptoms: Sedation, respiratory depression, hypotension.
- **Treatment:** Supportive care is the mainstay of treatment. Overdose may require administration of naloxone, intubation, and mechanical ventilation.
Interactions

Drug-Drug: Use with extreme caution in patients receiving MAO inhibitors within 14 days prior to or 1 mo after use. May result in uncontrolled hypotension, sedation, hyperpyrexia, hallucinations, delirium tremens, and death.

Nursing implications

Assessment

- Monitor type, location, and intensity of pain prior to and 1 hr following PO, subcut, IM, and IV administration. When titrating opioid doses, increased of 25–50% should be administered and titrated to achieve a 50% reduction in the patient’s pain rating on a numerical or visual analog scale or the patient reports satisfactory pain relief. When titrating doses of short-acting morphine, a repeat dose can be safely administered at the time of the peak if previous dose is ineffective and side effects are minimal.

- Patients receiving sustained-release morphine may require additional short-acting doses for breakthrough pain. As the time of the peak if previous dose is ineffective and side effects are minimal. Doses of short-acting morphine should be increased by 25–50% as needed, when titrating doses of short-acting morphine, a repeat dose can be safely administered at the time of the peak if previous dose is ineffective and side effects are minimal.

- Assess geriatric patients frequently; older adults are more sensitive to the effects of opioid analogues and may experience CNS depression. Physical stimulation may be sufficient to prevent significant hypoventilation. Sedation may be sufficient to prevent significant hypoventilation. Sedation may be increased by 25–50%. Initial dosages of short-acting opioid analgesics in elderly patients may be reduced.

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morphine

side effects and respiratory complications more frequently. *Pseudo* indicates pseudo-addictive, patient-frequent. Children are more sensitive to the effects of opioid analgesics and may experience respiratory complications, excitability and restlessness more frequently.

Prolonged use may lead to physical and psychological dependence and tolerance. This may not prevent patient from receiving adequate analgesia. Most patients who receive morphine for pain do not develop psychological dependence. Prognosis is higher doses must be required to relieve pain with long-term therapy.

Assess bowel function routinely. Inadequate prevention of constipation with increased intake of fluids and bulk and with locators to minimize constipation effects. Administer stimulant laxatives routinely if opioid use exceeds 3–5 days unless contraindicated.

Lab Test Considerations: May alter plasma and urine levels.

Toxicity and Overdose: All opioid antagonists is required to reverse respiratory depression or coma, naloxone is the canadine. Dilute the 0.4 mg ampule of naloxone in 10 mL of 0.9% NaCl and administer 0.02 mg bolus twice IV at 2–4 mg every 2 min. For children and adults weighing >60 kg, administer 0.1 mg of naloxone in 10 mL of 0.9% NaCl for a concentration of 10 mcg/milliliter and administer 0.5 mcg/kg every 2 min. Titrate dose to avoid withdrawal, seizures, and severe pain.

Potential Nursing Diagnoses

Acute pain (Indications)

I. Chief complaints (Indications)

Risk for injury (Side Effects)

Implementation

- **High Alert**: Do not confuse Astasma (morphine sulfate) with Demerol (propoxyphene) or Demerol (Propional). Do not confuse MS Contin (morphine sulfate) with Demerol (Propional). Do not confuse morphine (concentrated oral liquid) with morphine (concentrated oral liquid).

- **High Alert**: Do not confuse morphine with fentanyl — errors have resulted in death. Other errors associated with morphine include overdose and infusion pump miscalculations, especially in children. Consider patients’ previous anesthetic use and current requirements. Carefully doses that greatly exceed normal range. Rare second pretreatment multiphasically check original order, dose calculations, and infusion pump settings. Use only preservative-free formulations for IV, and for epidural and interstitial routes in all patients.

- **High Alert**:Administer high doses may be more effective if given before pain becomes severe.

- **High Alert**: Administration with antagonists may have additive analgesic effects and may permit lower doses.

- **High Alert**: When changing from one opioid to another form of morphine in extended-release tablets, administer a total daily dose of oral morphine equivalent to previous daily dose (see Appendix B) and administer every 4–6 hr (Kadian), or every 8–12 hr (Emenda). Oral doses may be administered with food or with beverages to enhance the analgesic effect.

**Opioid Implications**

- **Genetic Implication**: CAPI TALS indicate life-threatening, underline indicates moderate risk.

**Opioid Implications**

- Genetic Implication:

**Side Effects**

- Toxicity and Overdose:

**Lab Test Considerations**

- Toxicity and Overdose:

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**Opioid Implications**

- **Genetic Implication**: CAPI TALS indicate life-threatening, underline indicates moderate risk.

**Opioid Implications**

- Genetic Implication:
Y-Site Compatibility: Continuous Infusion:

- 0.1–1 mg/mL or greater for continuous infusion.

Concentration: 0.45% NaCl, Ringer’s or LR, dextrose/saline solution, or dextrose/Ringer’s or LR.

Remifentanil, rituximab, rocuronium, scopolamine, sodium acetate, sodium bicarbonate, propranolol, protamine, pyridoxime, quinupristin/dalfopristin, ranitidine, saline, succinylcholine, tartaric acid, tippins, ticarcillin/colistin, tizanidine, tobramycin, tolazoline, topotecan, tocainide, tocopherol, tomodial, tobramycin, tramadol, trespine, tramadol, trastuzumab, trastuzumab, trastuzumab, trastuzumab, trastuzumab, trastuzumab, trastuzumab, trastuzumab, trastuzumab.

Y-Site Incompatibility: Y-Site Incompatibility: Continuous Infusion:

- May be administered via patient-controlled analgesia (PCA) pump.

Diluent:

May be added to D5W, D10W, 0.9% NaCl, Ringer’s or LR, dextrose/saline solution, or dextrose/Ringer’s or LR.

Dilution:

- May be administered via patient-controlled analgesia (PCA) pump.

Adverse Effects:

- May be administered via patient-controlled analgesia (PCA) pump.

Patient Teaching:

- May be administered via patient-controlled analgesia (PCA) pump.

Evaluation/Desired Outcomes:

- May be administered via patient-controlled analgesia (PCA) pump.

Home Care Issues:

- May be administered via patient-controlled analgesia (PCA) pump.

Pain Management:

- May be administered via patient-controlled analgesia (PCA) pump.

High Alert:

- May be administered via patient-controlled analgesia (PCA) pump.

Why was this drug prescribed for your patient?

- May be administered via patient-controlled analgesia (PCA) pump.

Encourage patients who are immobilized or on prolonged bedrest to turn, cough, and breathe deeply every 2 hr to prevent atelectasis.

Caution patient to avoid concurrent use of alcohol or other CNS depressants with morphine.

Advise patient to change positions slowly to minimize orthostatic hypotension.

May cause drowsiness or dizziness. Caution patient to call for assistance when ambulating or sitting up and to avoid driving or other activities requiring alertness until response to medication is known.

Dilution:

- May be administered via patient-controlled analgesia (PCA) pump.

Home Care Issues: High Alert: Explains in patient and family how and when to administer morphine and how to care for infusion equipment properly.

Pediatrics: Use only the measuring device dispensed with the medication.

Teach parents or caregivers how to accurately measure liquid medication and to administer morphine and how to care for infusion equipment properly.

Pedi:

- May be administered via patient-controlled analgesia (PCA) pump.

Drug Information:

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