**High Alert**

**Name:** Meperidine (me-per-i-deen)

**Drug Class:** Opioid analgesics

**Schedule II**

**Pregnancy Category C**

**Indications**

Moderate or severe pain (alone or with nonopioid agents). Analgesic during labor. Unlabeled Use: Rigors.

**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.

**Pharmacokinetics**

**Absorption:** 50% from the GI tract; well absorbed from IM sites. Oral doses are about half as effective as parenteral doses.

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

**Protein Binding:** Neonates: 52%; Infants 3–18 mo: 85%; Adults: 60–80%.

**Metabolism and Excretion:** Mostly metabolized by the liver; some converted to normeperidine, which may accumulate and cause seizures. 5% excreted unchanged by the kidneys.

**Half-life:** Neonates: 12–39 hr; Infants 3–18 mo: 2.3 hr; Children 5–8 yr: 3 hr; Adults: 2.5–4 hr (in impaired renal or hepatic function [7–11 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>15 min</td>
<td>60 min</td>
<td>2–4 hr</td>
</tr>
<tr>
<td>IM</td>
<td>10–15 min</td>
<td>30–60 min</td>
<td>2–4 hr</td>
</tr>
<tr>
<td>Subc</td>
<td>10–15 min</td>
<td>40–60 min</td>
<td>2–4 hr</td>
</tr>
<tr>
<td>IV</td>
<td>immediate</td>
<td>5–7 min</td>
<td>2–3 hr</td>
</tr>
</tbody>
</table>

**Contraindications/Precautions**

**Contraindicated in:** Hypersensitivity; Hypersensitivity to benzodiazepines (some injectable products). Recent (within 14 days) MAO inhibitor therapy; Severe respiratory insufficiency; OB: Chronic use may pose risk to the fetus including possible addiction; Lactation: Excreted in breast milk and can cause respiratory depression in the infant.

**Use Cautiously in:** Head trauma; Severe renal or hepatic impairment; Acute asthma attack, COPD, hypoxia, or hypercapnia; Hypothyroidism; Adrenal insufficiency; Delirium; Delirious patients (dose ↓, sedation); Drug-induced abnormal (par or propranolol) heart rate; Patients with normal heart rate, or existing bradycardia; High dose or prolonged therapy (>600 mg/day or >2 days). Risk of CNS stimulation and seizures due to accumulation of normeperidine. Skull cell anemia (may require ↓ initial doses). OB: Use during labor and delivery can cause respiratory depression in the newborn. Pedi: Syrup contains alcohol, which can cause "gaming syndrome" in neonates. Children may have ↑ risk of seizures due to accumulation of normeperidine. Geri: Appears on Beers list; morphine recommended.

**Adverse Reactions/Side Effects**

**CNS:** Seizures, confusion, sedation, dysphoria, euphoria, floating feeling, hallucinations, headache, unusual dreams.

**EENT:** Blurred vision, diplopia, miosis.

**Resp:** Respiratory depression.

**CV:** Hypotension, bradycardia.

**GI:** Constipation, nausea, vomiting.

**GU:** Urinary retention.

**Derm:** flushing, sweating.

**Misc:** Allergic reactions including ANAPHYLAXIS, physical dependence, psychological dependence, tolerance.

**Interactions**

**Drug-Drug:** Do not use in patients receiving MAO inhibitors or procarbazine (risk of severe reactions—contraindicated within 14 days of MAO inhibitor therapy). CNS depression with alcohol, antidepressants, and sedatives/hypnotics. Administration of agonist/antagonist opioid analgesics may precipitate opioid withdrawal in physically dependent patients. Nalbuphine or pentazocine may ↓ effects and adverse reactions (concurrent use should be avoided). Phenytoin may ↑ metabolism and may ↓ effects. Chlorpromazine and thioridazine may ↑ the risk of adverse reactions (concurrent use should be avoided). May aggravate side effects of isoniazid. Acyclovir may ↓ plasma concentrations of meperidine and normeperidine.

**Drug-Natural Products:** Concomitant use of kava-kava, valerian, or chamomile can ↓ CNS depression. St. John’s wort may ↓ serious side effects, concurrent use not recommended.

**Generic Implication:** CYP2D6 inhibitors indicate morbid dependence; CYP3A4 inducers indicate most frequent. **Discontinued:** Discontinued.
**Route/Dosage**

**PO**: Meperidine (Adults): Analgesia — 50 mg q 2–4 hr; max le 7 mg (not to exceed 400 mg q 24 hr). Preoperative sedation — 50–100 mg IM or subcut when contraindications become regular; may repeat q 1–2 hr. Pediatric sedation — 50–100 mg IM or subcut 30–90 min before anesthe sia.

**PO**: Meperidine (Children): Analgesia — 1–1.5 mg/kg q 4–6 hr (should not exceed 100 mg/kg/day). Preoperative sedation — 1–2 mg/kg 30–60 min before anesthetic (route exceed adult dose).

**IV**: (Adults): Analgesia — 15–50 mg as a continuous infusion; PID — 10 mg initially, with a range of 1–5 mg incremental dose, recommended lockout interval is 6–10 min (minimum 5 min).

**IV**: (Children): Gentlest rate of injection — 0.5–1 mg/kg loading dose followed by 0.5 mg/kg/hr, max total/hr, means to effect up to 5–7 mg/kg/hr.

**NURSING IMPLICATIONS**

**Assessment**

- Assess type, location, and intensity of pain prior to and 1 hr following PO, subcut, and IM doses and 5 min (peak) following IV administration. When initiating opioid doses, increases of 25–50% should be administered until there is either a 50% reduction in the patient’s pain rating on a numerical or verbal analog scale or the patient reports satisfactory pain relief. A repeat dose can be safely administered at the time of the peak if previous dose is ineffective and side effects are minimal.

- An equianalgesic chart (see Appendix B) should be used when changing routes or when changing from one opioid to another.

- Assess HR, pulse, and respiration before and periodically during administration. If respiratory rate is >10/min, assess level of sedation. Dose may need to be decreased by 25–50%. naloxone (Narcan) is the antidote. Dilute 0.1 mg/mL and administer 0.01 mg/kg per 2 min. Children and patients weighing >40 kg, dilute 0.1 mg/mL of naloxone in 10 mL of 0.9% NaCl and administer 0.05 mg/kg every 2 min. Titrate dose to avoid withdrawal, seizures, and severe pain. In patients receiving meperidine chronically, naloxone may precipitate seizures by eliminating the CNS depressant effects of meperidine, allowing the convulsive activity of normeperidine to predominate. Monitor patient closely.

**Potential Nursing Diagnoses**

- Acute pain (Indications)
- Disturbed sensory perception (visual, auditory) (Side Effects)

**Implementation**

- High alert: Accidental overdose of opioid analgesics has resulted in fatalities. Before administering, clarify all ambiguous orders; have second practitioner independently check original order, dose calculations, and infusion pump settings.

- Meperidine is contraindicated in patients with known sensitivity to meperidine, allowing the convulsant activity of normeperidine to predominate.

- Monitor patients on chronic or high-dose therapy for CNS stimulation (restlessness, irritability, seizures) due to accumulation of normeperidine metabolite. Risk of toxicity increases with doses >600 mg q 24 hr, chronic administration (>2 days), and renal impairment.

- Meperidine has been reported to cause delirium in the elderly; older adults are at increased risk for normeperidine toxicity. Monitor frequently.

- Pain: Acute pain is more effective if given before pain becomes severe. An equianalgesic chart (see Appendix B) should be used when changing routes or when changing from one opioid to another.

- Sedation: Meperidine has been reported to cause delirium in the elderly; older adults are at increased risk for normeperidine toxicity. Monitor frequently.

- Lab Test Considerations: Meperidine levels and tissue concentrations.

- Therapeutic: Naloxone is the antidote.

- Common Side Effects:
  - Nausea, vomiting, constipation, respiratory depression, or coma, (Narcan) in the anterior. Administer the 0.4-mg ampule of naloxone in 10 mL of 0.9% NaCl and administer 0.02 mg/kg every 2 min. Children and patients weighing >40 kg, dilute 0.1 mg/mL of naloxone in 10 mL of 0.9% NaCl for a concentration of 10 mcg/mL and administer 0.5 mcg/kg every 2 min. Titrate dose to avoid withdrawal, seizures, and severe pain. In patients receiving meperidine chronically, naloxone may precipitate seizures by eliminating the CNS depressant effects of meperidine, allowing the convulsive activity of normeperidine to predominate. Monitor patient closely.

© 2015 F.A. Davis Company

**CONTINUED**
CONTINUED

meperidine

- If dose is < 50% as effective as parenteral, change to oral as directed. If dose is less effective after a few days, do not increase dose without consulting health care professional.

- Teach parents or caregivers how to accurately measure liquid medication and to store the medication properly after it is removed from refrigeration.

- Advise patient to take medication as directed. If dose is less effective after a few weeks, do not increase dose without consulting health care professional.

- Teach parents or caregivers how to accurately measure liquid medication and to store the medication properly after it is removed from refrigeration.

- Advise patient to take medication as directed. If dose is less effective after a few weeks, do not increase dose without consulting health care professional.

- Advise patient to avoid concurrent use of alcohol or other CNS depressants.

- Advise unvaccinated patients that nurses andこれまでの医療機関の医者からの会話は、举报を経て本機関の医師および薬剤師の注意事項に従ってください。
Encourage patient to turn, cough, and breathe deeply every 2 hr to prevent atelectasis.

Evaluation/Desired Outcomes

- Decrease in severity of pain without a significant alteration in level of consciousness or respiratory status.

Why was this drug prescribed for your patient?