MEPERIDINE USAGE POLICY

University of Pittsburgh Medical Center – Presbyterian
Pittsburgh, Pennsylvania
Meperidine Guidelines for Use

Meperidine has been proven a safe and effective analgesic for use in postoperative pain management, pre-procedure analgesia, conscious sedation, and for prevention of drug-induced rigors and postoperative shivering. Its use is not without dangers, especially in the following situations: utilization of repeat dosing; administration of high doses; prolonged therapy; co-administration with medications that may lower the seizure threshold; and in patients with a history of seizure disorders or with compromised renal or hepatic function. The presence of an active CNS-toxic metabolite, normeperidine, makes meperidine a less-than-optimal first-line choice for analgesia in most situations. Normeperidine is half as potent as an analgesic, but twice as neurotoxic than meperidine.

Evidence in the literature documenting adverse events associated with meperidine in patients with hepatic dysfunction, renal dysfunction, and with normal renal function has raised awareness of the potential problems associated with its use. The AHCPR and APS have published recommendations regarding meperidine’s place in therapy, and recommend reserving it for patients who have a demonstrated allergy or intolerance to first-line opioids and that it should not be given at doses >600mg/24h or for longer than 48h. Institutions across the country are adopting these guidelines and implementing similar formulary restrictions for meperidine. In addition to this national trend and the published recommendations, over 12 adverse events with meperidine have been reported at UPMC-P over the last two years. From this information and a full review of the literature, it was approved that the use of meperidine at UPMC-P should be restricted to the following indications below.

Meperidine Use Guidelines for UPMC-P

- Short-term acute pain management for moderate-to-severe pain episodes when other first-line opioids (eg. morphine, hydromorphone) are contraindicated or intolerance is documented. Equianalgesic doses of morphine, hydromorphone, and meperidine are 10mg: 1.5mg: 75mg, respectively.
- Treatment or prevention of drug-induced (eg. amphotericin B) or blood product-induced (platelets, PRBC) rigors and treatment of post-anesthesia shivering
- Pre-procedure analgesia prior to adult procedures
- Neuraxial analgesia administered by the anesthesiology department (eg. epidural, intrathecal) when other agents cannot be used
- Dosing:
  - Acute pain management: 25-100 mg IV (0.5-1mg/kg) q2-3h or 50-150mg SC q3-4h as needed
  - Pre-procedure analgesia: 12.5-100mg IV (0.75-1mg/kg) immediately-30 minutes prior to procedure (total dosage range 1.5-3mg/kg [100-200mg])
  - Rigors or shivering: 12.5-50mg IV every 15-20 minutes until symptoms are controlled
  - Meperidine should not be used for greater than 48 hours and at doses greater than 600mg/24 hours. A soft-stop of 48 hours will be placed on all dosage forms of meperidine.
  - Patients on long-standing opioids may require higher doses, and if so, should be closely monitored for signs and symptoms of toxicity.
- Cautions:
  - IM meperidine is not recommended.
  - The use of oral meperidine and PCA meperidine is not recommended.
Patients with renal dysfunction, defined as a estimated ClC$_r$ < 50 ml/min, or those with liver dysfunction, defined as 3x normal AST or ALT, should not receive meperidine.

Patients receiving antidepressant therapy with a MAO inhibitor (MAOI) or those receiving selegiline within the last 14 days should not receive meperidine.

This initiative was reviewed by representatives from the Pain Service, Anesthesiology, Oncology, Emergency Department, Internal Medicine, Neurosurgery, GI Lab, and General Surgery. For more information on this initiative, please visit the Drug Information and Pharmacoepidemiology WebPage at [http://www.upmc.edu/druginfo](http://www.upmc.edu/druginfo)

University of Pittsburgh Medical Center-Presbyterian (UPMCP) Drug Use Guideline

**Guidelines for Naloxone Administration and Patient Monitoring**

1. **Patients should meet all of the following criteria before naloxone (Narcan®) is administered:**

   - Sedation Scale = 3 (Somnolent; Difficult to arouse)
   - RR < 8
   - Pinpoint pupils

   Documented exceptions to the criteria may be accepted based on physician assessment and clinical judgment.

2. **If the criteria listed above are met, stop the administration of the opioid** and benzodiazepines, if prescribed. Maintain IV access.

3. **Provide oxygen via face mask STAT.**

4. **Stay with the patient.** Continue to attempt to arouse the patient. **Request help** from a coworker.

5. **Notify the primary physician and/or house staff of the need to immediately evaluate the patient.** If the house staff does not arrive within 5 minutes or if the nurse assesses the need, a “Condition C” should be called. House staff should contact the appropriate consult services following the patient (i.e., Pain Service, Palliative Care Service, UPCI Pain Program, or the Toxicology Treatment Program).

6. **Obtain a physician’s order for naloxone administration:** Naloxone 0.04mg IV q 1 minute until a change in alertness is observed. Dilute 0.4mg naloxone (one ampule) with NSS to a total volume of 10mL (1 ml = 0.04mg) in a 10 mL syringe.

7. **Titrate the prescribed naloxone until the patient is responsive.** At that point, stop naloxone dosing and reassess the patient. Naloxone administration should not cause pain to return or precipitate opioid withdrawal.

8. **If the patient does not respond,** continue to titrate naloxone at the same rate. **If a response is not obtained after one ampule of naloxone** (10 cc of diluted solution) **is administered,** examine the patient for alternate causes of sedation and respiratory depression.

9. **Keep the naloxone syringe readily available.** The duration of action of naloxone is considerably shorter than the duration of action of most narcotics. A second dose of naloxone may be needed in as
early as 30 minutes. **House Staff or a consult service should assess the need to administer naloxone by continuous infusion.** For assistance with further naloxone dosing, please contact the UPCI Pain Program (644-1724) or the Toxicology Treatment Program (647-7000).

10. **House staff or a consult service should determine what additional monitoring is necessary.** Patients receiving long-acting opioid products (i.e., OxyContin™, MS CONTIN, fentanyl patch, or methadone), epidural morphine analgesia, higher than expected opioid doses and/or concomitant benzodiazepine therapy may require additional monitoring. **Partial reversal of respiratory depression via naloxone does not prove that the narcotic was the primary cause.** The patient should be evaluated to determine if other disease states might have exacerbated the effects of the opioid. **Patient-specific evaluation should be performed and monitoring needs should be determined, as well as the site of continued monitoring.** Patients who have refused intensive care interventions and monitoring may remain in their current setting with approval by the physician or as per their advanced directives.

**Minimal Monitoring Requirements:** Monitor vital signs (RR, BP, HR), pulse-oximetry, and pain score every 15 minutes for 2 hours; then every 30 minutes for the next 4 hours.

11. **Re-evaluate the events leading to the need for naloxone administration.** In cases where the prescribed opioid dosing was too high, reassess the therapeutic plan for pain management. **Consider decreasing the opioid dose by 50%**. Resume opioid administration when the patient is easily aroused and after the RR increases to > 9.

12. **Physicians, nurses, and therapists should document their actions.**