

FAST FACTS AND CONCEPTS #71

MEPERIDINE FOR PAIN: WHAT'S ALL THE FUSS?

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Background Meperidine (MP) is a synthetic opioid, chemically related to the anti-diarrhea agents diphenoxylate and loperamide (Imodium). This *Fast Fact* discusses the pharmacology of MP and concerns about its use as an analgesic.

Pharmacology MP produces analgesia by binding to the mu-opioid receptor, as does morphine, producing the same effects and toxicities as morphine. 75-100 mg of parenteral MP has the same analgesic effect of ~10 mg parenteral morphine (see *Fast Fact* #36). MP has a shorter duration of action than morphine, only 2.5-3.5 hours. Oral MP is a very low-potency opioid: 300 mg = 30 mg oral morphine.

Why is it controversial? Prior to the 1990s, MP was the most commonly prescribed drug for post-operative pain, largely by the intramuscular route, ordered PRN at a q4-6 hour dosing interval. Since physicians learned how to manage pain from their experiences with surgical patients, MP was the parenteral opioid physicians were most familiar with and so the opioid they typically used for any severe pain problem. However, due to its relatively low potency, short duration of action, and toxic metabolite (see below), MP is a poor analgesic choice.

Over 25 years ago, it became widely recognized that continued MP administration over several days leads to a syndrome of CNS excitation, with tremors, myoclonus, delirium, and seizures. This syndrome, due to accumulation of the metabolite normeperidine, is more prevalent in the elderly or in patients with renal dysfunction.

Finally, MP was established in medical lore as *the* drug of choice for certain pain conditions, notably pancreatitis/biliary colic and sickle cell pain. In fact, there is little research supporting the contention that MP is the drug of choice for pancreatitis. A review of opioid impact on biliary pressure found contradictory results from in vivo biliary manometry studies and only anecdotal reports documenting significant clinical impact. Recent consensus reports on sickle cell pain have specifically recommended not using MP, due to its short duration and toxic metabolite.

What are the recommendations? Every national pain management clinical practice guideline published since 1990 has advised that parenteral MP is not appropriate for a) long-term use (beyond several days), b) any chronic pain syndrome, c) the elderly, or d) patients with renal dysfunction. The American Pain Society recommends 'meperidine should not be used for more than 48 hours for acute pain in patients without renal or CNS disease, or at doses greater than 600 mg/24 hours, and should not be prescribed for chronic pain.' In view of all the national guidelines, some hospitals have removed MP from their formulary, and others restrict use to short-term, procedure related analgesia (e.g. for bone marrow biopsies, colonoscopies).

What is the bottom line? There is little rationale for prescribing parenteral MP and no justification for using oral MP. Parenteral MP is a reasonable choice only when a) there is intolerance to all other opioids, and/or b) very brief analgesia is needed.

References

1. Principles of Analgesic Use in the Treatment of Acute and Cancer Pain. 5th Ed. Glenview IL: American Pain Society; 2003. Available at: <http://www.ampainsoc.org/pub/principles.htm>.
2. Acute Pain Management Guideline Panel. Acute pain management: Operative or Medical Procedures and Trauma Clinical Practice Guideline. AHCPR Publication No. 92-0032. Available at: <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat6.chapter.32241>.
3. Management of Cancer Pain. Clinical Practice Guideline No. 9; AHCPR Publication No. 94-0592. Rockville, MD. Agency for Health Care Policy and Research, US Department of Health and Human Services, Public Health Service; 1992, 1994. Available at: <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat6.chapter.18803>.
4. Clinical Practice Guideline: Pain Management in the Long-Term Care Setting. American Medical Directors Association, 1999. Most recent version of these guidelines available at: <http://www.amda.com/tools/cpg/chronicpain.cfm>.

5. Simopoulos TT, et al. Use of meperidine in patient-controlled analgesia and the development of normeperidine toxic reactions. *Arch Surg.* 2002; 137:84-88.
6. Isenhower HL, Mueller BA. Selection of narcotic analgesics for pain associated with pancreatitis. *Am J Health-Syst Pharm.* 1998; 55:480-486.
7. Guideline for the Management of Acute and Chronic Pain in Sickle Cell Disease. Glenview, IL: American Pain Society; 1999. Available at: <http://www.ampainsoc.org/pub/sc.htm>.

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