

**NURSE, PHYSICAL THERAPIST AND PATIENT EASE-OF-CARE:  
A META-ANALYSIS COMPARING FENTANYL IONTOPHORETIC TRANSDERMAL SYSTEM (ITS)  
VERSUS INTRAVENOUS PATIENT-CONTROLLED ANALGESIA (IV PCA) IN POSTOPERATIVE PAIN  
MANAGEMENT**

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**Introduction:** Intravenous patient-controlled analgesia (IV PCA) has been shown to provide effective pain relief; however, it is an invasive technique that may interfere with mobility. A new self-contained, needle-free PCA approach for the management of moderate-to-severe acute postoperative pain is fentanyl iontophoretic transdermal system (ITS) which administers fentanyl transdermally via iontophoresis.

**Identification of the problem:** PCA therapy has been proven to be an effective method for post-operative pain management. Intravenous (IV) PCA is the most common method utilized, but the therapy is cumbersome for the patient and time consuming for nurses. IV PCA limits patient mobility, restricting physical therapy and requires maintenance of IV access. Nurses must program pumps, ensuring proper drug selection, PCA dose, lock-out interval and hourly limits. IV sites must be monitored and maintained and syringes changed when empty. Newer PCA technology that does not require IV access would improve patient mobility for physical therapy and reduce the amount of nursing time required to obtain a PCA pump, program the pump, and maintain IV access.

**Purpose of the Study:** To compare the ease-of-care (EOC) of fentanyl ITS and morphine IV PCA from the nurse's, physical therapist's (PT) and patient's perspective.

**Methodology:** All four randomized Phase 3 trials conducted comparing fentanyl ITS (N=1,271) with morphine IV PCA (N=1,298) were reviewed for inclusion in this meta-analysis. All four trials have been previously published (Grond S et al. Br J Anaesth. 2007;98:806-815; Hartrick CT et al. Reg Anesth Pain Med. 2006;31:546-554; Minkowitz HS et al. Pain Med. 2007;8: 657-668 and Viscusi ER et al. JAMA. 2004;291:1333-1341). Trials were included if they utilized one of the EOC questionnaires (nurse, physical therapist or patient) developed and validated by Harding and colleagues (Harding G et al. J Adv Nurs.2007;59(5):530-541 and J Med Econ.2010;13(1):42-52). Data was analyzed by The Medicines Company (Parsippany, NJ).

**Results:** Fentanyl ITS was found to provide significant advantages compared with morphine IV PCA in terms of nurses' Overall EOC ( $p<0.001$ ), PTs' Overall EOC ( $p<0.001$ ) and patients' Overall EOC ( $p<0.001$ ). In the nurse EOC, fentanyl ITS was rated as more time efficient ( $p<0.001$ ), more convenient ( $p<0.001$ ) and nurses had a greater level of satisfaction ( $p<0.001$ ) compared to morphine IV PCA.

**Discussion:** Fentanyl ITS is a non-invasive system that delivers preprogrammed analgesic doses based on patient control, it reduces the need for venous access for pain management, eliminates the potential for programming errors, and minimizes the potential for medication errors. EOC as assessed by nurses, PTs and patients favored fentanyl ITS over morphine IV PCA.

**Conclusion:** Results from this meta-analysis demonstrate that an easy-to-use PCA modality such as fentanyl ITS has the potential to enhance convenience and time-efficiency with which nurses care for postoperative patients, resulting in a high degree of nurse satisfaction.

**Implications for perianesthesia nurses and future research:** Fentanyl ITS may have important implications for postoperative care as it is shown to be more convenient and time-efficient and should allow nurses to have more time for direct patient care. With fentanyl ITS there should be no potential for programming errors and no need for IV access.