

PHARMACY

Purchasing & Products

Product Spotlight

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Hospira's LifeCare PCA Pain Management System

PATIENT-CONTROLLED ANALGESIA (PCA) GIVES PATIENTS A greater sense of control over their pain relief and may result in decreased sedation, greater patient satisfaction, and fewer post-operative complications than analgesia administered by intramuscular injection.¹ However, PCA delivery is not without its pitfalls. From 1998 to 2003, more than 5,000 PCA errors were reported by MEDMARX and the USP-ISMP Medication Errors Reporting Program (MERP), with 7.9% regarded as harmful.²

Part of Columbus Regional Healthcare System, The Medical Center in Columbus, Georgia, is a 413-bed, non-profit teaching community hospital. Because managing acute pain effectively and safely is an overarching concern in our institution, we carefully researched "intelligent" infusion technology and installed Hospira's LifeCare PCA pumps along with Hospira's Plum A+ intelligent infusion pumps, both of which utilize the MedNet safety software in a wireless configuration.

Product Features

We have been using LifeCare PCA for over a year. From the outset, we recognized that not all patients are appropriate candidates for PCA therapy, and devised criteria that limit use to patients who understand the pumps and are capable of administering medications with this system. Friends and family members are not allowed to administer medications for the patient (PCA by proxy), which can lead to over-sedation and respiratory depression.

The pumps feature integrated bar code readers, which identi-

fy drugs and their concentrations from the bar codes on pre-filled and pharmacy-prepared drug syringes and then auto-populate information on the pump's programming screen, thus limiting the chance of administering a drug or concentration outside of hospital-defined parameters. We have had 100% compliance with LifeCare PCA because there is no override option; when the clinician inserts the syringe into the device, the drug is automatically selected from the drug library for that particular clinical care area (CCA).

Three pain-relief drug formulations with standardized dosages and concentrations are available. About 99% of our PCA patients are prescribed morphine, which is available at a 1 mg/mL concentration in 30-mL syringes. Since meperidine use is restricted in our hospital, we also offer hydromorphone as an alternative to morphine at 1 mg/mL, 25 mL, in 30-mL syringes compounded and bar coded in



Using MedNet safety software, clinicians can run reports correlating the amount of pain medication used by a patient with his self-assessment of relief.

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our pharmacy. For morphine-tolerant patients, we have morphine, 5 mg/mL in 30-mL syringes. Hospira offers pre-filled morphine syringes.

Once a syringe is placed in the pump, the drug name and concentration are automatically displayed on the LCD screen, and the “rule sets” (hard and soft upper and lower limits for that drug) are engaged from the library in the MedNet software. If a programmed dose is outside the limits defined in the library, an alert is displayed to prevent or correct the infusion.

We developed 18 drug libraries – the maximum allowed – to accommodate individual CCAs. Each library, in turn, was customized to meet the CCAs’ needs with drug-dosing safety limits to reflect our usage preferences and practice patterns. The PCA pumps use separate libraries and are easily programmed. In addition, PCA pumps are set up for post-anesthesia care unit (PACU) patients prior to transfer to the med/surg unit, so that PCA can be initiated immediately upon their arrival.

The PCA pumps also store protocols (frequently used prescriptions) to ease programming and support standardization of best practices. The final confirmation screen is important for preventing errors, as it displays all of the drug parameters, including the drug name, concentration, lockout interval, bolus or continuous infusion along with the PCA, and the total amount of drug to be administered. A clinician must confirm this data on the touch screen before the infusion can begin. Since we have designated PCA drugs as high-alert medications, we also require a “double-check” by a second clinician as an added safety measure. It is also important that PCA pumps be physically separated from general infusion pumps to avoid the potential for IV line mix-ups and possible medication errors. Because we chose a wireless configuration, we have increased flexibility for remote pump management, data retrieval, uploading of upgraded software, drug library transfers and updates, and real-time infusion monitoring.

Results

The MedNet software offers numerous reports that help us identify incidents involving PCA therapy and analyze their causes. In our most recent six-month data review, 48 hard-limit alerts for continuous administration of pain therapy and 75 hard-limit alerts for PCA were reported. This tells us that programmed doses were outside parameters in our drug library, and potential errors were prevented at the point of care. In the same time period, there were 51 soft-limit alert overrides, 19 edits for dose limits, two edits for the loading dose, and 12 edits for PCA. This suggests that initial entries programmed by the clinician were incorrect, the soft limit alert was raised, and the clinician corrected the entry, thereby preventing potential errors.

A particularly valuable customized report correlates the amount of pain medication a patient uses over time with his self-assessment of relief based on a scale of one (no pain) to 10 (worst possible pain). From this data, physicians have been able to determine whether the prescribed medication is appropriate for that patient and make adjustments as necessary, helping us ensure the delivery of appropriate, safe pain relief. Our nurses like the pumps and have found them easy to use. The LifeCare PCA pain management infusion system has been well-received and provided insights that make a difference in how we provide pain relief for our patients. ■

References:

1. Momeni M, Crucitti M, De Kock M. Patient-controlled analgesia in the management of postoperative pain. *Drugs*. 2006;66(18):2321-2337.
2. Patient-Controlled Analgesia Pumps. Rockville, Md: USP Center for the Advancement of Patient Safety; September 2004. USP Quality Review 81.

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