Forget Smart Phones – What You Need Are Smart Pumps!

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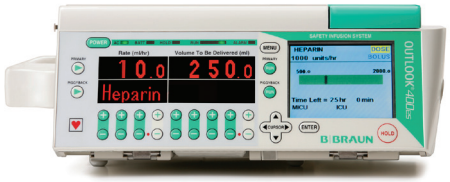
Objective

Medication safety is a primary goal for our system of 4 major medical centers in the New York City area. To reduce errors associated with IV infusion, we evaluated several infusion pumps with smart pump technology and selected the B. Braun Outlook® 400ES based on the following key safety features:

- real time data monitoring
- wireless retrospective reporting software
- ease of use
- light-weight, single channel device



After implementation, we used the real time view and retrospective infusion data to identify opportunities to further enhance patient safety.

Methods

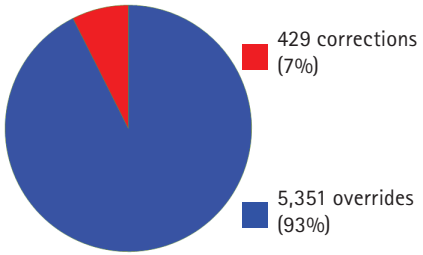
A multidisciplinary team from all hospital sites met weekly to standardize our hospital formulary, including drug concentrations, diluents, and weight-based dosing. The new formulary was updated in our electronic medical record and computerized physician order entry. A smart pump drug library was created with input from various departments, establishing parameters such as soft and hard dosing limits, clinical advisories, and bolus dosing. We created a single, uniform drug library for all smart pumps across our system.

DoseTrac® Real Time and Retrospective Data

Real time monitoring allowed us to see all of our infusions, confirm whether they were programmed in the drug library, and immediately identify if any infusions were outside the dosing limits. **We were pleased to find drug library utilization in critical care at 100%.** Retrospective reports allowed us to identify trends with drug library utilization, dose overrides, corrections, and top drugs associated with alerts. Six month data analysis (Jan – June 2012) showed the following:

Overrides vs. Corrections

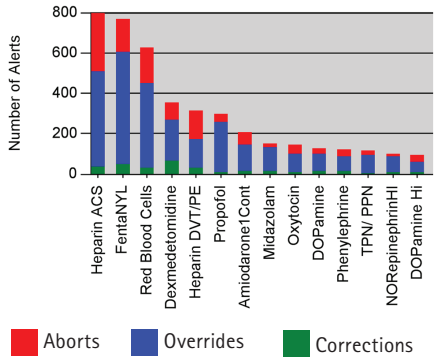
n = 5780 Alerts



- Few dose corrections indicate low incidence of programming error
- Only 3 insulin corrections over 6 months!
- High number of overrides led us to look at our soft limits and practices

Alerts by Drug

2012



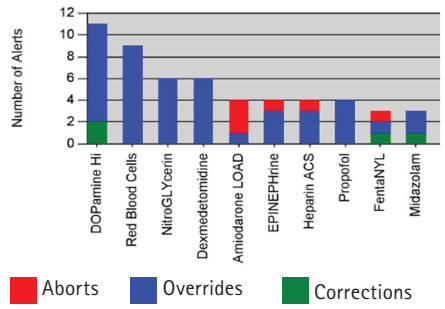
- 493 heparin ACS overrides - exceeding soft limit of 1000 units/hr
- 46 fentanyl "good catches"- all corrected to within the soft limits
- 396 RBCs overrides – 52% due to infusing 80-100 ml/hr (soft max 75 ml/hr)
- 198 dexmedetomidine overrides – exceeding soft limits and bolus dosing
- 250 propofol overrides – 23% due to bolus dosing
- 2988 bolus doses - using bolus feature

Results

Significant reduction in alerts was achieved through dosing limit modifications, education on use of bolus feature, cheat sheet for staff, and distribution of weekly DoseTrac reports to pharmacy, nursing, and administration.

Alerts by Drug

2013

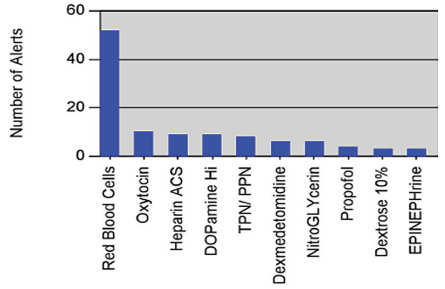


Reduction in alerts for target drugs:

- **88% reduction in heparin ACS alerts**
- **88% reduction in fentanyl alerts**
- **48% reduction in RBC alerts**
- **45% reduction in dexmedetomidine alerts**
- **63% reduction in propofol alerts**

Overrides by Drug

2013



- Continue to evaluate RBCs due to incidence of overrides

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