

# Use of “Smart Pumps” In a Cardiac Surgery Intensive Care Unit Improves Patient Safety and Reduces Alerts

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## Purpose

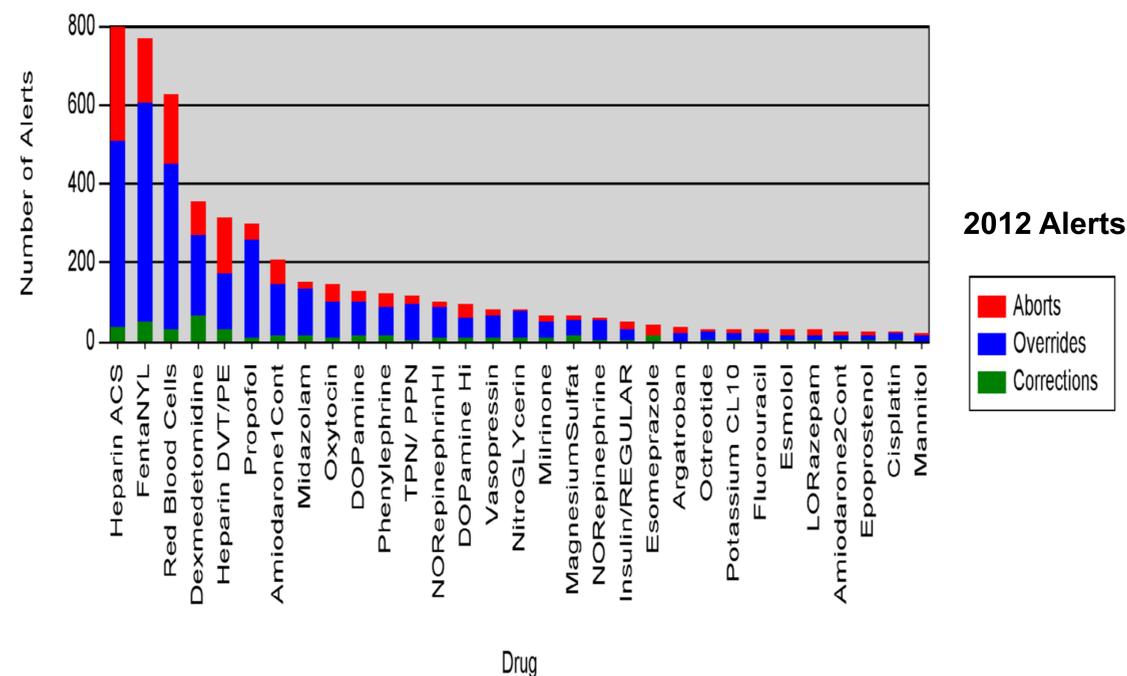
- Reduction of medication errors associated with intravenous infusions is of great importance in the critical care setting
- We sought to determine whether the use of “smart pump” technology could improve patient safety and reduce alert fatigue in a cardiac surgery intensive care unit (CSICU)

## Methods

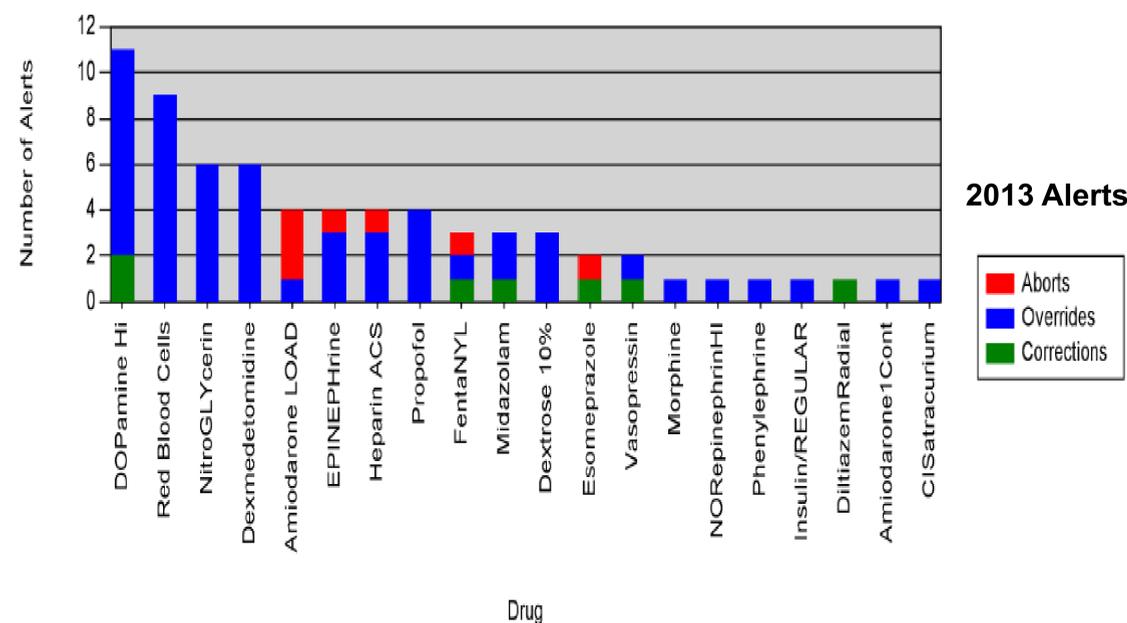
- A multidisciplinary team was created to standardize our hospital formulary, including drug concentrations, diluents and weight based dosing
- This new formulary was updated in our electronic medical record and computerized physician order entry system
- A single uniform “smart pump” drug library was created establishing parameters such as soft and hard dosing limits, clinical advisories and bolus dosing
- Wireless integration of the “smart pumps” (B. Braun Outlook 400 ES) provided real time data monitoring for clinical decision support and retrospective reporting on dosing trends and practices in a CSICU

## Results

- Six month data analysis (Jan. – June, 2012) identified 5780 dosing alerts in the CSICU setting
- Real time monitoring allowed for assessment of all infusions and identification of dosing limit deviations



- 5,780 alerts from Jan-Jun 2012
- 7% Corrections, 93% Overrides



## Results Continued

- Retrospective reporting allowed for identification of trends within drug library utilization, dose overrides, dose corrections and most frequent infusions associated with alerts
- Approximately 7 % of alarms were dose corrections
- Analysis identified five infusions associated with the highest incidence of dose overrides: heparin, fentanyl, RBC transfusion, dexmedetomidine and propofol
- Only 3 insulin alerts were noted during the study period

## Conclusion

- Analysis of the programming sequence surrounding CSICU infusion alerts allowed for identification of override causes
- Interventions to reduce alerts included adjustment of soft dosing limits, reinforcement of the proper use of the bolus feature and reeducation on appropriate dexmedetomidine dosing
- Post intervention reanalysis revealed a reduction in alerts, ranging from 45-88%, involving the five identified infusions
- Weekly distribution of alert reports to pharmacy, nursing, providers and administration provides for ongoing monitoring and analysis

## Disclosure

- The authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have direct or indirect interest in the subject matter of this presentation: Elizabeth Palillo, Pharm.D., Cathy Sullivan, MSN, Charles M. Geller, MD: Nothing to disclose,