



Smart Pump Wireless Technology: An IQ Boost for the Pump

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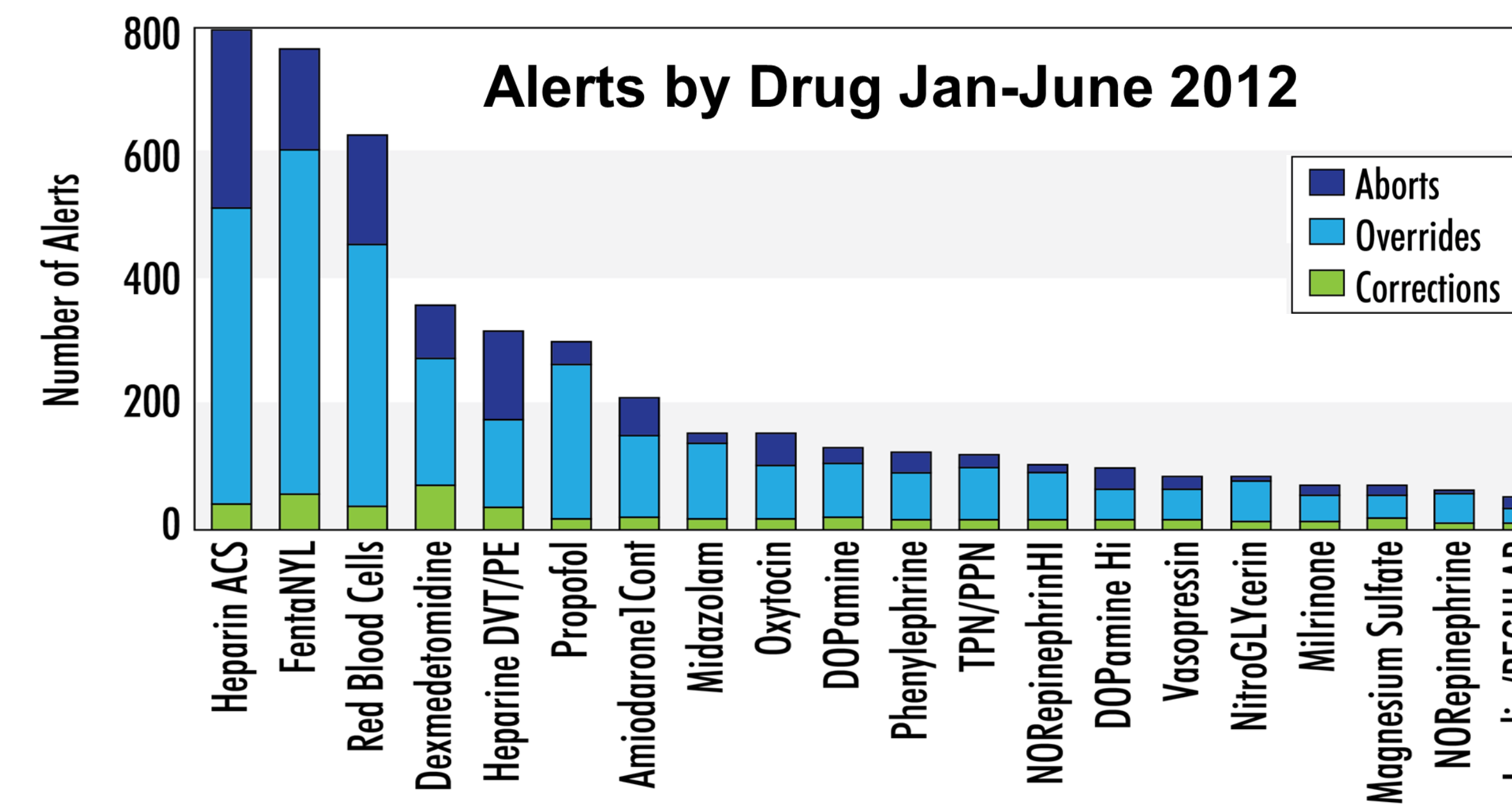
Background

According to the Joint Commission, medication errors remain the fourth leading cause of sentinel events. A 2006 Institute of Medicine report states that at least 1.5million preventable medication-related adverse events occur in the United States every year, accounting for an annual cost of \$3.5 billion. Targeting parenteral medication errors: 58% of errors are initiated during administration. These types of errors are three-times more likely to cause harm or death. We sought to determine whether the use of smart pumps could improve patient safety, reduce alert fatigue, improve adherence to policies and identify practice issues in ICUs.

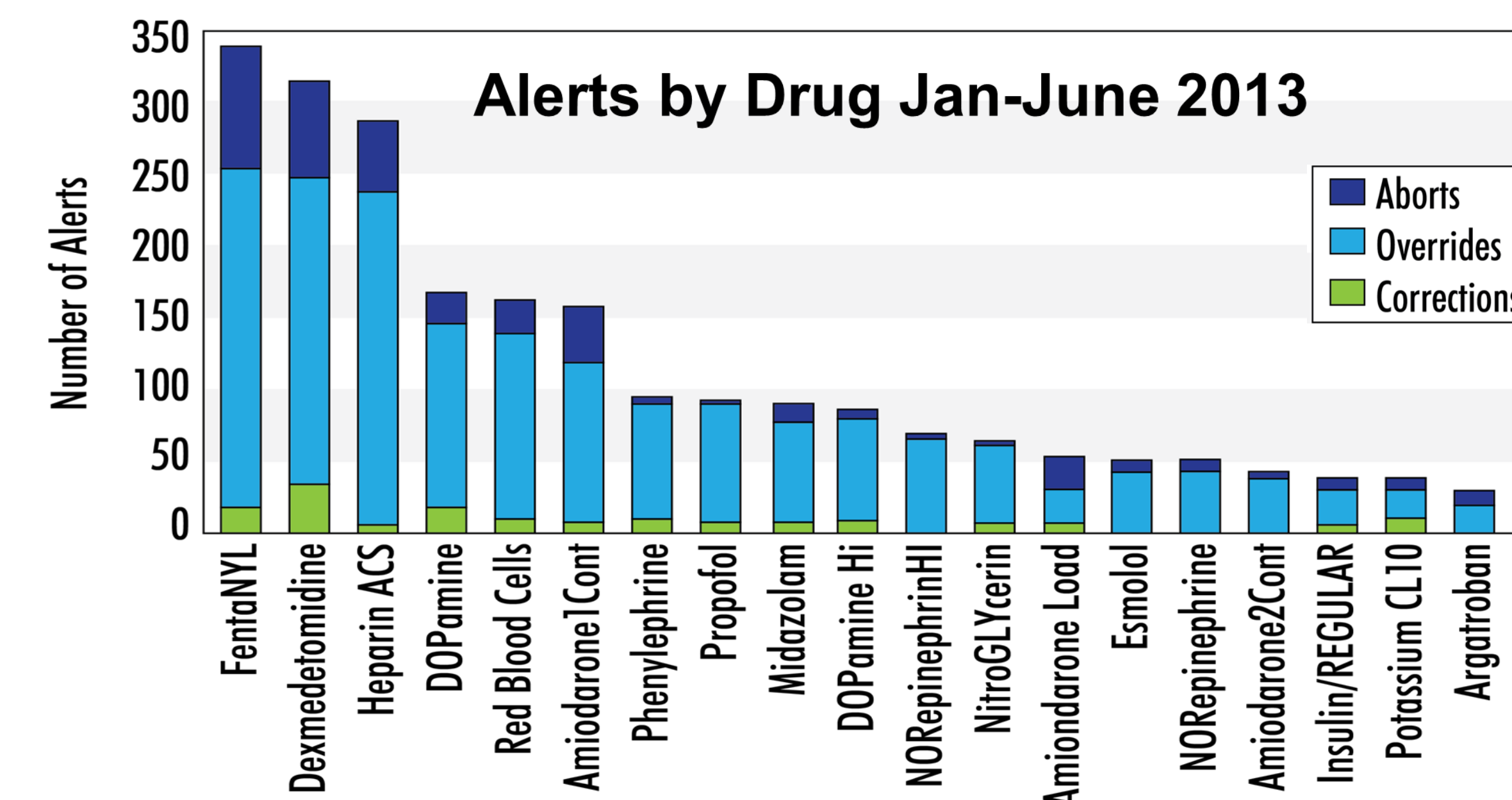
Methods

- A multidisciplinary team was created to standardize our hospital formulary, including drug concentrations, diluents and weight based dosing
- A single uniform smart pump drug library was created establishing parameters such as soft and hard dosing limits, clinical advisories and bolus dosing
- The addition of wireless integration of the smart pumps provided real time data monitoring for clinical decision support and retrospective reporting on dosing trends and practices
- Real time monitoring allowed for assessment of all infusions and identification of dosing limit deviations
- Retrospective reporting allowed for identification of trends within drug library utilization, dose overrides, dose corrections and most frequent infusions associated with alerts
- Weekly distribution of alert reports to pharmacy, nursing, providers and administration provides for ongoing monitoring and analysis

Results

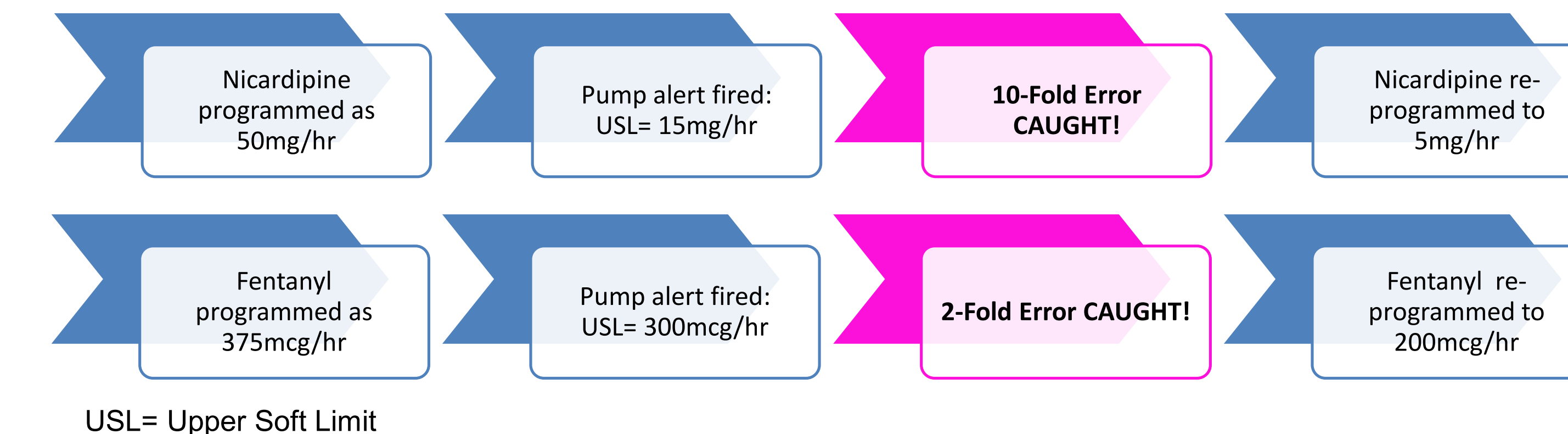


- 5,780 alerts (7% dose corrections, 93% overrides)
- 100% drug library utilization in ICU
- Analysis identified five target infusions: heparin, fentanyl, RBCs, dexmedetomidine, propofol



- Decreased alerts for five target infusions 45-88% by adjusting limits in the library and re-educating staff

Good Catches



Conclusion

- Smart pumps are an important tool to help prevent and decrease parenteral medication errors
- Wireless technology is essential to maximize their safe utilization
- A multidisciplinary committee should review reports regularly to identify practice issues and ensure the accuracy of the library's clinical content
- Good catches and bad catches can be shared with staff for educational purposes
- Structured quality metrics will help continue to maintain the safety and integrity of the smart pump library

Future Direction

- Based on utilization reports the critical care committee is meeting to further standardize the infusions and limit available concentrations
- Library corrections will be considered periodically based on the multidisciplinary report groups analysis
- High alert medications will continue to be a target for pump review

References

- Institute of Medicine. Preventing Medication Errors: Quality Chasm Series. Washington, DC: National Academies Press; 2006.