University Hospitals
Cleveland | Ohio

Applying Smart Pump Data to Improve Safety at the Bedside

Integrating New Technologies that Support Quality Improvement

MEDICATION SAFETY

Objective 1: Apply smart pump data to promote compliance with administration of infusions using drug library guardrails.

Objective 2: Optimize the pump's drug library to decrease alert fatigue through application of top drug alert data.

Safety Implications at the Bedside

Principles of Human Performance – Humans are Fallible*

- Normal conditions, humans make ~5 – 7 errors/hour
- Stressful/emergency conditions, humans make ~11 – 15 errors/hour

**2009 Department of Energy (DOE) Center for Human Performance report*

Smart pumps prevent human errors from reaching the patient. When smart pumps are utilized to the fullest extent of the technology design, they can significantly improve safety at the bedside. A simplified approach to application of pump data by nursing staff raises awareness to support use and reduce risk.

In April 2010, the FDA announced their "Infusion Pump Improvement Initiative" to proactively provide regulations for the development of safer, more effective infusion pumps across the industry, further increasing the expectation for appropriate use of smart pump technology to protect the patient.

Alaris® System Process

Alaris® committee – 38 members
Monthly system meetings – 18 facilities
Quality data reports – ~400/month
Nursing drug alert data review
Quarterly wireless server updates

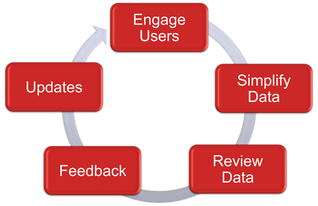
Presented at: The 7th Annual American Nurses Asssociation's (ANA) Nursing Quality Conference™ "Reaching the Core of Quality," Atlanta, GA. February 6 – 8, 2013.

Quarter III 2012

- Total Alaris® devices = 2,309
- Total facilities = 18
- Total harm averted = 808 incidences
- Total severe harm averted = 211 incidences
- Severe harm health care intervention cost avoidance = $2,198,831

University Hospitals Patient Safety Initiative 2012

Identifies practice issues, dangerous trends and drug library modifications



Monthly process

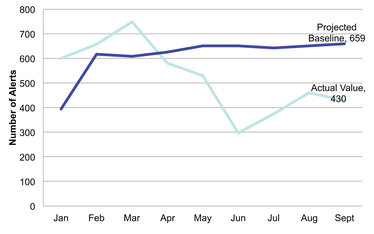
- Step 1 – Review dashboards and data, #1 drug alert, by nursing division
- Step 2 – Engage nursing staff; using the "UH Drug Alert User Guide"
- Step 3 – Submit feedback; Alaris email or Alaris intranet communication form
- Step 4 – Audit; monitor compliance
- CNO/Quality – Quarterly status reports
- Quarterly – Drug library wireless server updates

Tools our hospital has developed to assist nursing with understanding its data

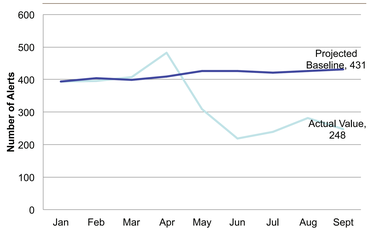
- Drug Alert User Guide – to prompt discussion with staff about what is causing the drug alerts to fire
- Feedback submissions – Alaris email and intranet communication forms
- Intranet Resources – Online interactive pump education, drug library guardrail settings, tip sheets

Measures of Success: Improved compliance with use of the drug library. Decreased number of drug alerts. Increased number of harm avoidance cases.

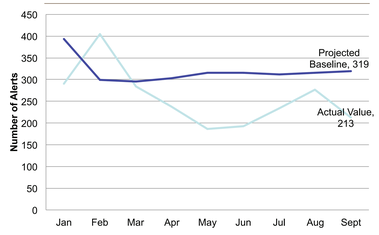
Potassium Chloride



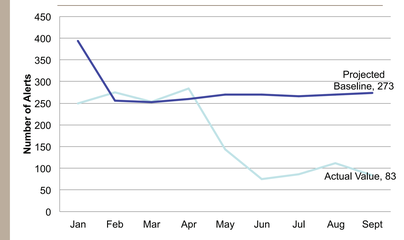
Blood (RBCs)



Magnesium Sulfate



Zofran/Decadron



Drug Name	Alert Change Value	Alert Change Percentage
Potassium Chloride	-229	-35%
Blood (RBCs)	-183	-42%
Magnesium Sulfate	-106	-33%
Zofran/Decadron	-190	-70%
Total Change	**-250**	**~45%**