Using RFID for IV Pump Management

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Clinical Advantage Strategy: Provide clinical care that exceeds national standards and is delivered in a culture dedicated to **safety** through employee and physician **partnership**

Operational Efficiency and Effectiveness Strategy: *Implement process improvements* that result in **operational efficiency** and **effectiveness**

Consumer Strategy: Build consumer loyalty and **design our care, services** and products to exceed our consumers’ expectations

Employee Strategy: *Define our culture as one of a shared partnership* in HealthEast’s success.
**Project Background**

**Goal:** Reduce costs & improve service levels associated with IV pumps.

**Outcomes:**
- Implemented new efficient processes
- Decreased damage & repairs
- Increased pump utilization
- Reduced # of replacement pumps required
  - Capital savings
  - Rental savings

**Goal:** Improve patient safety by providing advanced pump technology

**Outcomes:**
- Implementation of drug formularies on pumps
- Formulary interfaced wirelessly to pumps using WiFi network.
- Ability to rent pumps eliminated > buy more pumps!

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**2005**

Partnered with 3M to utilize Six Sigma practices to evaluate IV pump utilization.

**2007**

HealthEast implemented “Smart” pumps.

**New Goal:**
Improve management of “Smart” Infusion Pumps
Project Details

HealthEast Conducts a Process Optimization Project

- Defined project scope
- Prioritized focus (IV Pumps)
- Mapped current processes
- Evaluated potential solutions

Decision

- Implement 3M’s WiFi RTLS System to manage infusion pumps at HealthEast’s Woodwinds Hospital
- Monitor & measure results for expansion justifications to other HealthEast facilities and other applications.
Woodwind’s Hospital Pilot

- Technology-receptive environment (e.g., wireless telemetry, VoIP, Wi-Fi)
- Collaborative staff
- Smaller facility to evaluate impact.
System Implementation

- RFID tags were attached to all infusion pumps
- Tags allow software to calculate relative location of the device by using the standard Wi-Fi signal
- Software installation, Tag attachment and Hospital calibration all occurred in less than one work-week of time on site
System Implementation

- Installed application software (Calibration modeling, a database, rule/event generation) transforms tag signal strengths into a useful graphical user interface

- User interface is accessed by Stores & Distribution, with some Biomed use related to maintenance
System Implementation

• Tags have two programmable buttons
  – When either button is pressed the application software signals the potential availability of that pump.

• IV Pump Process
  – Nurses remove all fluids/medications from the pump after last dosages administered to the patient.
  – Nurses press either button on the tag to signal that the pump is no longer needed for their patient.
  – Stores & Distribution staff access the location system to see where potentially available pumps are located when requests exceed current pump inventory.
  – Stores & Distribution staff retrieve pump if it is needed.
  – If no immediate need, Housekeeping cleans the pump and transfers to a clean utility area per normal procedures.

• The button press identifies infusion pumps available during peak needs creating a “Virtual Inventory”.
System Results

• Time required to locate pumps during peak needs reduced from 2 people, 10-60 minutes to 1 person, 5-10 minutes.
• Labor-intensive hospital-wide pump searches have not occurred since system activation (Jan 2008)
• 8 unneeded pumps were taken out of inventory.
RFID ROI Variables

Expense
• Initial Cost
• Annual Cost

Savings
• Device elimination
  – Pump, Firmware, Wireless Board
• Labor savings
  – Bio Med, Nursing Time, Materials
• Soft Savings
  – JCAHO, Pt Safety, Employee Satisfaction,
RFID ROI Results

Year 1 - $2,500 Savings
Year 2 - $18,000 Increase Cost
Next Steps

- Change in Vendor Relationship
- Explore different pricing models
- Evaluate expansion to other facilities