GE Healthcare Partners

The Smart Approach to Smart Technology

The implementation of nearly 2,000 infusion pumps improves patient safety and staff productivity.

The Challenge

One of the nation's largest nonprofit healthcare providers envisioned true "closed loop" IV medication administration. However, their fleet of legacy large volume infusion pumps on four campuses was plagued by manufacturer recalls and mounting mechanical failures. In addition, bedside nurses were becoming increasingly dissatisfied with using many different types of pumps, which lacked embedded safety software technology. The organization knew that it needed a new fleet. However, the investment would not only come with a hefty price tag, but also the time commitment needed to implement a new fleet would place a heavy burden on nursing, pharmacy, anesthesia, clinical engineering, IT, and the executive team.

Prompted originally by an initiative focused on reducing operational expenses, the organization recognized that a buy-out of leased "dumb" IV pumps, as well as efforts to right-size campus-specific fleets, would have a significant and immediate savings impact. After a rapid-cycle evaluation, the client decided to replace its aged fleet of nearly 2,000 infusion pumps supplied by its primary vendor with a newer generation device with wireless capabilities, safety software, and an EMR interoperability option.

Our Approach

Recognizing that managing such a large-scale project required extensive time and focus, the client decided to partner with GE Healthcare Partners. To start the project, GE Healthcare Partners assembled the SmartPump project team to revisit the organization's core business needs and how the purchase of new devices and safety software could be fully leveraged. Once the team was in place, the group decided to pursue full implementation of SmartPumps with bi-directional interfaces with the EMR, as this would provide the most intuitive process for end-users and significantly reduce the training requirements for hundreds of clinicians. The overarching goal was to achieve the greatest impact on adoption of medication administration "five rights" (aka the right patient, the right drug, the right dose, the right route, and the right time) technology with the least amount of disruption at the bedside. Key elements of the project methodology include:

- Pre-implementation activities inclusive of vendor relations, feasibility studies, and a pre-integration assessment
- Building a comprehensive drug library for an integrated environment
- Standardizing medication administration practices and products
- EMR integration with auto-programming and auto-documentation
- Design and implementation of sustainability with focus on QA processes and governance structures

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The Impact

- Implementation of systems that improve patient safety with large volume IV medication administration practices
- Implementation of systems that improve management of "near misses" and other avoidable errors that can lead to adverse events in patients
- Vastly improved clinical documentation through technology integration
- Improved efficiencies in pharmacy distribution with the real-time integrated knowledge of patient infusion use and needs
- Significant improvement in nurse satisfaction and nurse confidence during the delivery of high-risk IV medication

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Today, the client has replaced the old fleet of large volume pumps with new SmartPumps in all adult inpatient units, ERs, general surgery, outpatient clinics, and free-standing ambulatory care centers. The client also has implemented dose-error reducing software and supporting practices across all campuses. Based on the initial data, the team developed and implemented a second version of the customized drug library. Campus-based review teams have been organized and early monitoring of compliance data and "near misses" are underway.

There are still many activities to perform during the post-deployment phase and they include:

- Vetting newly developed policies and procedures to support new technology adoption with clinical stakeholders and clinical educators
- Device utilization studies for optimization
- System-wide standardization of all IV medication administration consumable products

The team continues to evaluate replacement of other infusion devices, particularly those in highly specialized clinical areas.

Results

Optimizing large-scale "smart" technology that promotes a culture of safety and improves employee satisfaction without increasing operational expenses requires a solid strategy, strong execution, and subject matter expertise. The impact of this technology on improving patient safety has been well demonstrated in the literature. Preliminary findings have already demonstrated avoidance of near misses in which the technology appeared to prevent significant patient injury. An ROI analysis is underway, the results of which will be published in an updated case study.

What began as a replacement program of nearly 2,000 "dumb" large volume infusion pumps sparked a chain reaction in technological enhancements, including implementation of dose-error reducing software with EMR integration, installation of real-time location tracking for devices, a system-wide upgrade of the wireless infrastructure that involved a new core and re-installation of hardware in multiple clinical settings, and new support systems necessary to ensure sustainability

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