

A Case Study

Integrated Data from Standalone Devices Driving Clinical Success

According to a November 2010 HIMSS Analytics survey, approximately one quarter of U.S. hospitals are on track to meet the 2011 meaningful use criteria set by the federal government. Without question, Jefferson Regional Medical Center (JRMC) enjoys a place among this percentage of on-track hospitals.

This is due, in part, to JRMC's commitment to medical device integration (MDI). Located in Pine Bluff, Arkansas, JRMC is a 475-bed, not-for-profit hospital serving 200,000 patients. JRMC's first foray in device integration began in 2004 with the integration of bedside monitors. In 2008, however, JRMC established a much bolder initiative: the integration of portable, standalone devices such as ventilators.

Challenges

Automating the flow of data from bedside monitors is relatively straightforward. Most bedside monitors easily connect to manufacturer-provided gateways. As one might expect, JRMC used one such gateway, GE's Unity Network, to funnel the data from its GE-brand bedside monitors into one central location in 2004.

But extracting data from bedside devices is different than extracting data from non-networked, portable devices. Standalone devices such as ventilators (and a plethora of others) do not connect to any kind of centralized system. In other words, brand-dependent gateways are not an option. Because standalone devices are not network-enabled, connecting to the data inside them is much more complex.

One way to overcome this lack of connectivity involves the installation of hardware near the point of care. Though this hardware can "connect" to standalone devices, it is costly and inflexible. And JRMC's IT budget didn't have room for investments in single-use hardware with little long-term flexibility.

"We didn't want to be locked into wall-mounted, wired terminal servers," says Andy Jenkins, JRMC administrative director of IT. "We couldn't justify the purchase of a solution that inflexible."

Solution

JRMC considered connectivity solutions from GE, Capsule and iSirona. Ultimately, iSirona was selected. The iSirona approach to device connectivity is software-based; the software leverages a hospital's existing IT investments, eliminating the need for single-use hardware.

For starters, JRMC embedded the iSirona software within its clinical information system, Sunrise Clinical Manager 5.5. It also installed the software on its rounding workstations and PCs. This enabled JRMC to bring its non-networked, standalone devices online in two ways, depending on whether or not the device was in a high- or low-acuity setting.

In a low-acuity setting, standalone devices are mobile, moving from room to room with a rounding clinician. Also moving from room to room are multi-use devices such as PCs and mobile workstations. In these cases, the standalone device can be directly connected to the rounding PC or workstation. The JRMC clinician can validate and send the data to the EMR right from the laptop or workstation.

In a high-acuity setting, the standalone device remains with the patient. In these instances, a small, iSirona-configured adapter is attached to the standalone device. The adapter continuously sends information directly to the CIS for clinician validation and inclusion in the EMR.

“After evaluating other products, iSirona was an easy decision for us because of the flexibility and options around implementation,” says JRMC CIO Patrick Neece. “When coupled with the technology of wireless adapters for portable devices and integration capabilities into our clinical documentation system, they were a natural fit.”

Results

In 2010, JRMC used the iSirona solution to integrate 12 non-networked, standalone ventilators.

“Our motto was to start with the devices that are the most used and have the most data,” says JRMC Director of Clinical Informatics Leah Wright. “We knew that our respiratory department was manually collecting a lot of data on the ventilators.”

JRMC used the iSirona technology to connect its existing Unity Network directly to the EMR as well; the iSirona solution is vendor-neutral, so it can deliver data from any device (including proprietary gateways) to any clinical information system.

From a clinical perspective, these MDI efforts have improved data accuracy and timeliness as well as workflow efficiency at JRMC.

Efficiency

JRMC is experiencing decreased charting time for nurses and increased time for direct care. According to Jenkins, the implementation is saving nurses approximately **2 hours** per nursing shift.

“Integrating the ventilators provided for an enormous workflow efficiency increase,” says Jenkins.

In fact, an in-house study revealed that it took 1½ hours to manually collect and enter vital signs for 17 patients. Following the integration, that same endeavor took only 59 minutes.

Accuracy

Manually transcribing data is inherently problematic. Problems like indecipherable handwriting, data entered in the wrong chart, and lost notes are all too common. Device connectivity reduces these risks through seamless data capture.

“We used to have a respiratory therapist manually recording data from the vents. We all knew that was not a good thing,” says Wright. “We’ve now taken away the human error factor in that environment. Our respiratory therapists are incredibly pleased.”

Timeliness

Automated data capture results in more immediate access to patient information as well. Previously at JRMC, an average of 12 hours passed between the time a device generated patient data and when that data was validated in the EMR. After implementing a software-based MDI solution, that time was reduced to two hours.

These data latency improvements enable doctors and caregivers to make decisions – from diagnoses to prescriptions – based on comprehensive, up-to-date EMRs. This helps dramatically across clinics. “We have about 15 physician clinics that have remote access to the CIS. If the data is timely and the vital signs are getting into the record more quickly, it means the physicians have faster access to that remotely.”

In addition, better data in the EMR is giving rise to improvements in the hospital’s rapid response team. “Now that the data is in the CIS more quickly, we have created a custom report that shares numbers such as blood pressure and respiration with the rapid response team,” says Wright. “If anyone on the report is falling outside the parameters, someone from the rapid response team will go visit that patient.”

Since 2004, JRMC has stayed ahead of the curve and is now poised to capitalize on meaningful use incentives thanks to its device integration efforts. In fact, less than 1 percent of all U.S. hospitals have achieved what JRMC presently has: a stage 6 ranking in the 8-stage HIMSS EMR Adoption Model. Still, JRMC looks forward. “Next year we will focus on our operating rooms,” says Jenkins. “Integrating the anesthesia machines will be key.”

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Customer

Jefferson Regional Medical Center
475 beds in Pine Bluff, Arkansas
125,000 clinical and 55,000 emergency-room visits/year

Clinical Information System

Eclipsys Sunrise Clinical Manager 5.5

Integrated Devices

GE's Unity Network (XX Dinamaps)
12 ventilators
X Dinamaps (those NOT at the bedside/connected to Unity?)

Challenges

Prevalence of brand-dependent MDI vendors
Standalone devices lacking network connectivity

Solution

Software-based connectivity
Avoidance of single-use hardware

Results

Improved data accuracy
Increased timeliness and relevancy of data
Improved workflow efficiency

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A quick redesign of the graphic below could work nicely near the end of the Solutions section.

