Integrated Data from Standalone Devices Driving Clinical Success

Customer
Jefferson Regional Medical Center

Clinical Information System
Allscripts Sunrise Clinical Manager 5.5

Challenge
Standalone devices lacking network connectivity

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

"After evaluating other products, iSirona was an easy decision for us because of the flexibility around implementation. That, combined with their ability to integrate directly into our clinical documentation system, made them a natural fit."

Patrick Neece, CIO

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. Located in Pine Bluff, Arkansas, JRMC is a 475-bed, not-for-profit, private 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 GE Dinamaps and SERVO-i 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 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. JRMC's IT budget didn't have room for investments in single-use hardware with little to no 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 three different vendors, but ultimately selected iSirona. The iSirona approach to device connectivity is software-based. By leveraging existing IT investments, iSirona eliminates the need for single-use hardware.

JRMC was able to easily embed 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.

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In 2010, JRMC used the iSirona solution to integrate 13 SERVO-i ventilators and 21 GE Dinamap monitors. JRMC's decision to integrate these standalone devices has paid off in the form of improved workflow efficiency, data availability and accuracy.

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Results

"Our approach was to start with the devices that are the most used and collect the most data," says JRMC Director of Clinical Informatics Leah Wright. "The Dinamaps were a given. Plus, our respiratory department was manually collecting a lot of data from ventilators."

Efficiency

An in-house time study on the GE Dinamap monitors revealed that the iSirona solution reduced the average round time per patient from 4.81 minutes to 4.07 minutes. Because patient care technicians typically check in on 10 patients three times each in a 12-hour shift, this results in a savings of 22 minutes per shift.

Though overall rounding time decreased following the GE Dinamap monitor integrations, time spent delivering direct care actually increased from 2.33 minutes to 2.78 minutes per patient. This is explained by the reduction in time spent documenting vitals. Prior to the integration, it took almost two minutes to manually collect and enter vital signs for each patient. Post automation, that same effort takes little more than one minute per patient.

Likewise, preliminary findings from an in-house time study on the SERVO-i ventilator integrations are promising. Prior to the integration, each respiratory therapist spent about 12.3 minutes manually recording data each time he or she checked on an intubated patient in the surgical intensive care unit. Because respiratory therapists typically conduct these checks four times in a 12-hour shift, the manual documentation process took approximately 42 minutes per intubated patient per shift. Thanks to the iSirona solution, that manual documentation process no longer exists.

Accuracy

Manually transcribing data is inherently problematic. Problems like indecipherable handwriting, data entered in the wrong chart, and lost notes are all too common. In fact, a Welch Allyn presentation delivered in January of 2009 stated that 10 to 15 percent of all transcribed test results are errant. Device connectivity reduces these risks through seamless data capture.

"We used to have respiratory therapists manually recording data from the vents, which was time-consuming and error-prone," says Leah Wright. "We've now streamlined the process, and our respiratory therapists are incredibly pleased."

Availability

Automated data capture results in more immediate access to patient information as well. Previously at JRMC, an average of 90 minutes passed between the time a device generated patient data and when that data was validated in the EMR. Post automation, the vitals are recorded nearly in real-time.

These data latency improvements enable doctors and caregivers to make decisions – from diagnoses to prescriptions – based on comprehensive, up-to-date EMRs. JRMC has 15 physician clinics that have remote access to the EMR. If the data is timely and the vital signs are getting into the record more quickly, it means the physicians have faster access to the information they need.

In addition, better data in the EMR is aiding the hospital's rapid response team. "Our integration allows us to create a custom report that shares patient data with our rapid response team," explains Wright. "If there's a nurse on the floor and his gut says someone isn't doing well, he can call in someone from the team to prevent that patient from crashing. The better the report they receive, the more valuable they can be when they arrive to help the 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 one percent of all U.S. hospitals have achieved what JRMC presently has: a stage six ranking in the eight-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."

Standalone Devices in Varied Environments

In low-acuity settings, standalone devices are ambulatory. They move from room to room along with multi-use devices such as laptops or mobile workstations. In these cases, the standalone device can be directly connected to the rounding laptop or workstation. In turn, these multi-use devices can then be used to validate and send the data to the EMR.

In a high-acuity setting, where the standalone device remains with the patient, 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.

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