Flawed Data Chain, Faulty EMR

How to Build a Solid Footing for Patient Data

iSIRONA

The transition from paper records to EMRs promises to improve healthcare efficiency, clinical decision-making, and patient outcomes. The U.S. government is even prepared to provide $19 billion in incentives for hospitals that can demonstrate "meaningful use" of EMRs.

But an EMR is only as good as the data it contains. If the data in the EMR is wrong—or even if it's right but hours old—then EMRs are nothing more than rapid-access gateways to inferior data. Analyses of EMR data quality show that the information is often faulty. However, the cause of these inaccuracies can be easily remedied, opening the door for major hospital-wide benefits.

Why Data Inaccuracies Occur

The research shows that the actual quality of data in EMRs is not good. One study looked at 623 sets of vital signs recorded at a 20-bed cardiac step-down unit in Florida. It found vital signs errors in 14.9% of the records.[1]

Another study looked at ventilator data for 678 patients in four intensive care units at a Salt Lake City tertiary care hospital.[2] The hospital had a computerized ventilator management protocol that drew directly from the EMR. Unfortunately, it often took several hours for data to make its way into the EMR. As a result, 3.9% of the ventilator protocol instructions were generated from EMR data that was incorrect or out of date.

Why do EMRs contain so much faulty data? Consider the data chain. Today, a great deal of patient data is hand-keyed into the EMR; in effect, today's data channel is the nurse. But people are relatively error-prone "data channels." Entry errors have to be expected. Likewise, association errors occur when patient data is entered but associated to the wrong patient.

Another set back caused by human data channels has to do with speed. Many nurses hustle from patient to patient, never stopping to enter data into the EMR until they can do so in batches at the end of a shift. When this occurs, patient data is essentially out of date before it is even entered.

To assess its efficiency in this regard, Texas-based Wise Regional Health System (WRHS) hired a third-party consulting firm and discovered that it took an average of 12 hours for device-generated patient data to make its way into the hospital's EMR. Unfortunately, when it comes to decision-making—from diagnoses to prescriptions—doctors and caregivers need *real-time* data, not data that is no longer relevant.

---

[1] "Enhancing Patient Safety through Electronic Medical Record Documentation of Vital Signs," *Journal of Healthcare Information Management*, Fall 2006.

[2] "Assessing Data Quality in Manual Entry of Ventilator Settings," *Journal of the American Medical Informatics Association*, May-June 2007.

A Fully Automated (Almost) Alternative

How can hospitals improve the quality of the data in their EMRs? The ideal solution is to build a data chain that uses technology, not *just* nurses, for fast, accurate communication of data to the EMR.

This sort of data chain is commonly referred to as medical device integration (MDI). MDI directly connects a hospital's EMR system to all its medical devices, from bedside patient monitors to ventilators to anesthesia delivery systems to renal dialysis systems and even standalone devices.

No doubt, this kind of automation greatly reduces nurses' documentation responsibilities. Still, MDI solutions (at their best) cannot completely eliminate nurse involvement in the documentation task. Nurses provide an invaluable and imperative link, as they are responsible for the review and authentication of automated data. They are also responsible for overseeing that data is being associated with the correct patient.

As one might expect, this sort of review and authentication process is much less time-consuming for a nurse than manual data entry. It also ensures quality. Together, nurses *and* MDI technologies create a solid footing from which accurate, timely data can be delivered to the EMR.

Benefits of Automation in Data Chains

When hospitals utilize automation and nurse authentication as described, the integrity of the data within the EMR is greatly enhanced. Issues like transcription errors become all but obsolete. With MDI, data not only becomes more reliable—it also becomes timelier.

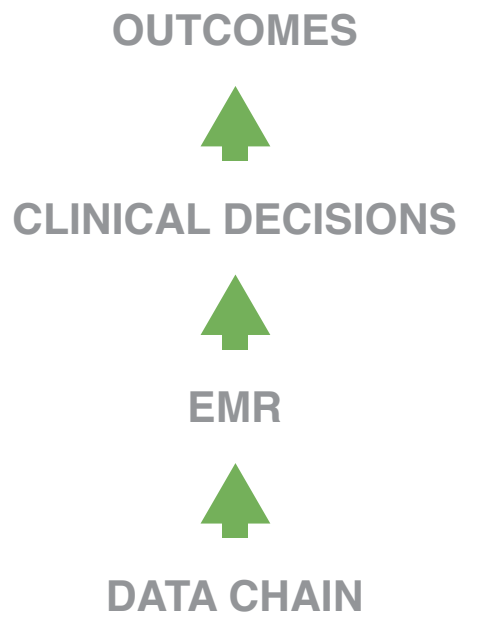
For example, WRHS (Decatur, Texas) deployed an MDI solution in their intensive care and cardiac vascular units. Data latency (the elapsed time from when patient data is generated to when it is validated and available in the EMR) went from 12 hours to two.

Likewise, at Jefferson Regional Medical Center (JRMC) in Pine Bluff, Arkansas, the validation of device data used to take an average of 90 minutes. Following the hospital's data automation efforts, vitals became available in nearly real-time. This is of great value, as mentioned, because it enhances a caregiver's ability to make informed decisions in the name of patient care.

In addition to these data latency improvements, MDI solutions also improve workflows. In the absence of MDI, nurses spend incredible amounts of time documenting device data. A 36-hospital[3] study found that nurses spend "a minority of time on patient care activities and a greater amount of time on documentation." Nurses in the study spent just 81 minutes per shift on patient care. Documentation, on the other hand, demanded 148 minutes per shift—nearly twice as much time.

---

3 "A 36-Hospital Time and Motion Study," *The Permanente Journal*, Summer 2008.



A high-integrity data chain delivers accurate, timely data to the EMR where it can support sound clinical decisions and better patient outcomes.

Because MDI lightens clinicians' documentation workloads, it enables them to spend more time doing what they do best: delivering direct care. Clinicians at JRMC experienced this shift following the hospital's integration efforts. In fact, time spent delivering direct care increased by almost one minute per patient.

Likewise, clinicians at the aforementioned WRHS reported that they spent up to five percent more time (an average of 30 minutes per shift) delivering direct patient care following the hospital's integration efforts.

Automated documentation enables clinicians at WRHS, JRMC, and other facilities across the nation to do what they do best—deliver direct patient care. Research shows that patient-care time has a dramatic impact on outcomes. One study[4] found that "the fewer registered nurse hours per patient, the greater the likelihood of patients developing pneumonia." Another[5] found that "greater registered nurse hours spent on direct patient care were associated with decreased risk of hospital-related death and shorter lengths of stay."

---

[4] Quoted in *Deadly Consequences: The Hidden Impact of America's Nursing Shortage*, National Foundation for American Policy, September 2007.

[5] Also quoted in *Deadly Consequences: The Hidden Impact of America's Nursing Shortage*.

Getting the Most Out of Your Data Chain

No doubt, MDI leads to increases in direct care. When used in conjunction with clinician reviews and validation, it also improves the data chain. This, in turn, increases the accuracy and timeliness of EMR data.

For hospitals looking to the future, quality data in the EMR is a must. As clinical decision support systems (CDSS) advance, robust, reliable EMRs will become even more critical than they already are. And, as illustrated, the EMR can only be as good as the data chain from which it feeds.

iSirona: A Simplified Approach to MDI

iSirona, in Panama City, Florida, is dedicated to data-chain integrity through MDI. Using iSirona's software solution, hospitals can connect virtually any medical device to their CIS, providing clinicians with faster access to more accurate patient information.

Still, the iSirona solution recognizes the necessity of nurse involvement. As such, iSirona's software solution incorporates nurse involvement through data review and authentication. This approach leads to accurate data that is assigned to the right patient and immediately available in the EMR.

MDI Technology

Accurate, current data
iSirona uses MDI to get data into the EMR immediately and accurately. Additionally, iSirona provides the only MDI solution that meets JCAHO requirements[6] for Positive Patient Identification.

Coverage
iSirona captures data from all medical devices, regardless of vendor. It works in both high- and low-acuity hospital environments and can be directly embedded into any CIS.

Ease of implementation
iSirona is a software-only solution that can be rapidly implemented at low cost. It can be fully integrated with existing systems and requires little or no training time.

6 Positive Patient Identification (PPID) requirements are issued by JCAHO, the Joint Commission on Accreditation of Healthcare Organizations.