Healthcare's New Big Picture: Transparent, Associative and Interactive

Manuel Lowenhaupt, MD

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Radianse

The smartest environment possible for patient care

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Healthcare's quest for the last half-century, on one level, has been to move to an integrated continuum of patient care in which prevention and treatment milestones are achieved as seamlessly as possible. We're finally at the moment of actualizing this vision, when technology can bring together people, processes and evidence-based medicine.

Radianse Reveal incorporates a suite of intelligent and interactive software applications that use the Radianse real-time location platform or RTLS to accurately correlate time, location, identity — and clinical context — to achieve this seamless continuum. By applying special knowledge-engine software to consistent and accurate location data within a framework of clinical protocols, Radianse Reveal creates a "big picture" of healthcare that takes clinical effectiveness to the next level and improves the patient experience.

Radianse Reveal applications and tools include real-time asset tracking and patient tracking, patient flow, clinical effectiveness and business intelligence. These value-added applications combine real-time location software, active radio frequency identification (RFID) and clinical context rules to track patients, staff and medical gear to create the smartest environment possible for patient care.

This one-two punch provides a transparent view into the healthcare enterprise that allows us to make intelligent associations among people, places and things while it automatically triggers actions based on best practices. We consider this capability "evidence-based management" because it creates the necessary infrastructure to execute on the promises of evidence-based medicine.

Clinicians are going to care for a patient before entering the data into a computer, which means manual systems fail when organizations need the data the most.

Tools for active, interventional management

Even the highest-performing hospitals with the best protocols will fail if people don't execute according to those guidelines.

Using Radianse Reveal applications and tools we can document and drive the quality and patient-safety process, identifying where the critical interactions between people occur and where the bottlenecks exist. And that's just scratching the surface. Hospitals can use Radianse Reveal for robust business analytics and forecasting, creating true performance dashboards for top executives that aren't merely views into the chaos but tools for active, interventional management. It's been a long time coming. Many of us in healthcare have been driving in the rear-view mirror, creating retrospective reports based on discharge data. Radianse Reveal applications and tools give us the ability to drive healthcare with visibility through the windshield – real time. Radianse Reveal applications truly provide a single solution for many problems, a strategy for whole-house optimization.

Must have capabilities
Transparent – visible to all appropriate users
Associative – makes intelligent judgments based on circumstances
Interactive – alerts staff to do the right thing at the right time

Information generated by Radianse Reveal applications is 1) transparent – visible to all appropriate users; 2) associative – makes intelligent judgments based on circumstances; and 3) interactive – alerts staff to do the right thing at the right time.

Healthcare providers and researchers have been toiling in the vineyards of evidence-based medicine for years. The result is a solid foundation of clinical protocols, pathways and order sets for best clinical practice. Nobody is saying there isn't a lot of work to be done, but for all intents and purposes the content is there. It's up to our quality experts, medical informaticists and change-management leaders to continue to shape that content and ensure its adoption in clinician workflow. We know that's a job that will never end.

But knowing the right thing to do is only half the equation. The other half – and the next great challenge in evidence-based medicine – is downstream, in execution, because even the highest-performing hospitals with the best protocols will fail if people don't execute according to those guidelines.

Moments of truth

Radianse has developed a wonderful association algorithm that can tell you how long a patient is in a certain location, whether that is an appropriate location, and who or what else is around, triggering automated alerts to fulfill a patient's "moments of truth."

The secret to this execution, to evidence-based management, lies in providing the data and automated alerts to fulfill a patient's "moments of truth," or key points of intercession in a particular care pathway. Radianse Reveal optimizes the enterprise for these moments of truth.

Care of stroke patients is a case in point. We now have a very good view of how to care for those patients, many of whom benefit from aggressive use of anticoagulants within a small window of time, usually within three hours of occurrence. For stroke patients, a moment of truth may be the initial evaluation, the initial imaging or the decision to use clot-buster TPA within that small window. Exacerbating the problem is the fact that we're usually dealing with a stroke patient in a surge moment, a time when patients may be flooding the ED. That requires automation.

By combining patented software algorithms with inexpensive, disposable RFID wrist tags – both components of Radianse Reveal – it's possible to "tag" a patient immediately upon arrival at a

hospital and follow them from moment to moment through discharge. Instantly the patient tag begins transmitting identity and location information (accurate to the bed level or within one meter) via antennae to the EHR. If a stroke patient isn't evaluated within 5, 10 or how many minutes a hospital designates, an alert is triggered.

By also tagging physicians and equipment, a hospital can measure and improve "door to doc" time or "door-to-balloon" time, in the case of an acute MI – both of which result in better clinical outcomes. If you know, for example, that a patient requires imaging within four minutes of arrival, you can build that algorithm into the system so that it automatically sends for a transport. Radianse has developed a wonderful association algorithm that can tell you how long a patient is in a certain location, whether that is an appropriate location, and who or what else is around. It can tell you, for example, that the wrong patient is in the wrong location for a procedure, when a high-risk patient is about to wander outside a safe boundary, or where to find a patient scheduled for a time-sensitive treatment.

A question of scale

ROI comes in a variety of ways – reduced equipment loss and rentals, less overtime, increased utilization and efficiency and improved communications.

Selecting the right kind of RTLS technology is critical because not all are scalable or practical for tracking both assets and patients. And only you know the optimal place to start, based on the problems you need to solve. The scalability of Radianse Reveal offers provider organizations a great advantage. If full-scale implementation is daunting, it's possible to target a single Radianse Reveal application such as asset tracking and achieve an ROI by dramatically reducing equipment loss and rentals and increasing utilization. It's also possible to use Radianse Reveal patient tracking in just the ED, OR or single medical unit. With patient tracking, ROI comes in a variety of ways, including reduced overtime, improved communications and increased efficiency.

We all know nurses spend too much of their precious time hunting and gathering devices like external pacers in the OR. With the advent of low-cost tags – pioneered by Radianse – it's possible to track anything, including pacers, EKG machines, C-arms and crash carts. Hospitals commonly lose wheelchairs that patient families inadvertently put in their car trunks. Using the Radianse Reveal asset tracking application it's possible to tag wheelchairs, calculate that one is approaching the exit and alert staff to check on it. The system will also find wheelchairs wherever they were last left.

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Eliminate manual data entry

No longer will a trauma patient undergoing a CT scan in radiology be delayed in surgery due to lack of real-time information and alerts to meet the next moment of truth.

Radianse Reveal's patient flow application can track virtually every care moment, resulting in uninterrupted evidence-based management and eliminating the manual data entry traditionally required at each handoff in the care process. Even electronic whiteboards – patient flow systems without automatic location systems – will prove useless if an ER or hospital is flooded. Clinicians are going to care for a patient before entering the data into a computer, which means manual systems fail when organizations need the data the most. With Radianse Reveal, if you tag patients and staff, when they move into a triage area, the system automatically registers that fact and displays it graphically and textually. When

they move into an exam room, the system follows that movement as well. No longer will a trauma patient undergoing a CT scan in radiology be delayed in surgery due to lack of real-time information and alerts to meet the next moment of truth.

A Radianse Reveal patient flow application can determine that a patient due to be discharged is in fact discharged and report it to the ADT system hours before it is typically input. The system automatically notifies housekeeping, starting a timer that triggers an alert if housekeeping hasn't arrived in the room by a certain time. Once housekeeping is done, an automatic request for a new patient in that bed is transmitted.

Conclusion: One solution for many problems

Because it is interoperable with all HIS vendors' systems, a Radianse real-time location platform is home in any hospital, health system or health information exchange. Just add a location field to the EHR. It's difficult to imagine a middleware solution that can empower so many applications to improve the core business of patient care, from equipment and device management, to patient flow and logistics to clinical effectiveness. But that's our take on RTLS with Radianse Reveal: transparent, associative and interactive.

Manuel Lowenhaupt, MD

Dr. Lowenhaupt is president, CEO and chairman of the board of Radianse. Dr. Lowenhaupt has over 20 years of diverse healthcare IT leadership and consulting experience, and is internationally recognized for his work in clinical informatics, care management and clinical operations. Dr. Lowenhaupt held senior strategic consulting roles for the past 17 years at the world's largest and most respected organizations, advising over 120 healthcare organizations in the United States, Canada, Europe and the Far East. Most recently, he was an executive partner at Accenture, where he was a thought leader in the company's Health and Life Sciences practice and a practice leader in the area of clinical transformation. Dr. Lowenhaupt also was national practice leader at Cap Gemini Ernst & Young and a partner in the Healthcare Practice of Deloitte Consulting. Prior to his consulting career, Dr. Lowenhaupt practiced medicine and led a multi-specialty group practice in Boston for 10 years. He also co-founded Boston Medical Systems (BMS) and worked as an investigator for the National Institute of Health. Dr. Lowenhaupt received his undergraduate degree from the Massachusetts Institute of Technology (Phi Beta Kappa) and his medical degree from Harvard Medical School.