



Soarian Clinicals brings transparency to a hospital's processes.

Integrating Role-based Workflows for Better Care

Soarian Clinicals represents the future of workflow-driven IT solutions for the broader universe of healthcare, but it has already become the present at The Chester County Hospital in West Chester, Pennsylvania, USA.

By Tim Friend

Ray Hess is building confidence and peace of mind utilizing a unique 'workflow engine' in healthcare to assist clinicians, administrators, and ancillary staff. If hospital personnel involved in a workflow deviate from the protocols established by the hospital, the system will automatically alert that individual or department using on-screen notification. Alerts can also be sent to a text pager or cell phone. Using Soarian® Clinicals, any deviation from the hospital's established workflows can be seamlessly notified via on-screen notification or by text messaging the authorized personnel's pager or cell phone. The IT solutions provide a safety net for physicians, staff, and patients, helping to promote a higher standard of care for everyone at the hospital.

Hess, Vice President of Information Management at The Chester County Hospital (TCCH) in West Chester, PA, has developed workflows with Soarian Clinicals for many problematic processes in the hospital. The Siemens solution has

been designed to help healthcare organizations meet the challenges of rapidly escalating healthcare costs, an aging patient population and the associated increase in chronic diseases, human resource shortages at hospitals, increasingly complex and technical work environments, and continually escalating regulatory pressures for higher standards of care.

Seamlessly Combining Hospital Processes

"For each user at TCCH: physician, nurse, executive, et cetera, the workflow-engineered IT system provides the right information for the task at hand," Hess explains. "Rather than having to use a string of disparate systems with clumsy interfaces and multilevel trees and menus, the single, uniform system brings together relevant information, orders, and documentation in a meaningful way from the moment a patient is admitted. It gathers

the patient's lab and diagnostic results, vital signs, documentation, and orders, and organizes them in a way that is most logical for the patient's condition. In a sense, the system tracks the workflow activities throughout the patient care cycle, constantly capturing data to help guide their care from one step to the next."

Soarian is the new generation of Siemens healthcare IT solutions that helps healthcare organizations to manage clinical, administrative, and financial processes. Its key components include Soarian Clinicals, Soarian Departmentals, Soarian Financials, Soarian Scheduling, and Soarian HIM (Health Information Management). Soarian Clinicals is one of the few IT solutions in today's healthcare market with an embedded workflow engine. Using Soarian Clinicals, Hess and his team used the workflow engine to create new workflows specific to the needs of their hospital. These workflows help coordinate patient care. The engine is so dynamic



With Ray Hess (left) and the Soarian Clinicals IT solution, Business Process Management moved into The Chester County Hospital.

and flexible that a workflow solution can be launched for practically any clinical tasks Hess enthusiastically reports. "The workflow engine allows you to automate your processes and actually use the clinical management systems to help direct processes that support clinical care. The industry term is Business Process Management, or BPM. This is a technology that exists generically within the IT industry to automate and control processes. You see it used very heavily in manufacturing, finance, and industry. We have not seen it yet in healthcare. To my knowledge, Siemens is the first vendor to take this and apply it in the acute hospital setting," Hess says.

An Evolutionary Process

TCCH has been a validation partner with Siemens in the development of Soarian and the workflow approach since 2001.

"The beta project started in 2001 before Soarian even had a name. It has been ongoing since then, with each piece being introduced over time as it is developed," Hess says. "It has been an evolutionary process, with piece after piece being put in place. We beta test them and extend the functionality. Every new piece gives you more opportunity to improve workflow."

Hess compares the workflow engine to a GPS navigation system in an automobile. "The GPS system in a car has four components: a database of information that includes the maps; the logic unit, which is the algorithm to get you from point A to point B; a satellite which knows where you are; and a user interface which directs your actions as you get to different decision points. The workflow engine acts the same way. We map out our process to make sure milestones of care are met. Then we alert people as the milestones

come up. We tell a doctor when something needs to be done. We can monitor the process, and then remind a doctor or caregiver if the step is not documented as completed. The more we are able to allow doctors to keep their eyes on patient care, the easier it is for them to do their jobs. It's more efficient and allows the doctor to work more effectively," Hess explains.

Workflow Excellence Rewarded

For Hess' ingenuity and efforts, last year, TCCH won the North American Global Excellence in Business Process Management and Workflow Award, awarded by the Workflow Management Coalition and the Workflow and Reengineering International Association. The award is displayed proudly on a table in Hess' office. The award submission prepared by Hess highlighted how two Soarian-driven work-



flows – Bed Management and Infection Control – have succeeded in reducing the number of manual steps within the processes of identification, notification, and tracking. “Infection Control is one of first areas we targeted,” Hess says. “The major focus within our hospital is with processes that have high volume, high risk, and high variability of results. The basic steps with Infection Control were all clearly electronically discoverable. The first iteration was with methicillin-resistant staphylococcus aureus (MRSA), which is a very interesting bacteria.”

Once patients have been infected with MRSA, they are usually considered to be life-long carriers and can possibly spread the infection to other patients. These patients ordinarily need to be placed in private rooms, and special precautions need to be taken to prevent the spread to other patients in the hospital. In the past, a history of infection should have been

noted in the patient’s medical records. The hospital’s Infection Control would later review the medical record and manually place all patients with a history of MRSA infection into a spreadsheet. If a patient with a history of MRSA was readmitted, the spreadsheet would indicate that the patient should be placed in isolation. The problem with this system was that the patient could be readmitted before the patient’s history of MRSA infection was recorded in the system, resulting in the possibility that the patient’s history would be missed upon readmission and the patient would be assigned to a semi-private room.

Decreased Hospital-acquired Infection

With the workflow engine, Hess has been able to enter the existing spreadsheet into the Soarian database. The Soarian Clinicals system interfaces with the laboratory so that every newly detected MRSA infection is now automatically entered into the Infection Control Database. This removes delays while automatically capturing the records of every new infection detected by lab tests.

Today, when a patient is admitted, his or her name is automatically scanned for a record of MRSA infection and checked against the database. If a match is found, the system immediately calls the hospital’s bed manager and leaves a message reporting that a patient has been admitted with a positive history of MRSA. This automatically alerts the bed manager that the patient should be placed in isolation. If, however, a patient with a history of MRSA infection does not have an active infection, that person can safely be placed in a semiprivate room. Thus, Hess has taken the workflow solution a step further and is providing even greater efficiency and cost savings. He designed the system to automatically check the patient’s record for any lab cultures that might have been done in the last six weeks – a facility protocol established by the hospital’s Infection Control Committee. If the check shows that a patient with a positive history of MRSA has tested negative for an active infection during that time and does not show nasal colonization, then, based on hospital protocol, the patient does not have to be placed into isolation. When a new MRSA-positive culture shows up on

a patient, the system sends a message to the caregivers (as predefined by the healthcare organization), and at the same time the tables are subsequently updated. For example, the person who controls beds is alerted immediately so that a room can be selected for isolation.

The result of this diligence has been a decrease in the spread of hospital-acquired MRSA infections at TCCH. The system also saves money by keeping patients who are MRSA-negative out of isolation. This keeps isolation rooms available for the patients who actually require them. The Infection Control program has been so successful that TCCH has begun monitoring for other infections as well.

Bed cleaning has also become very sophisticated at TCCH. The system monitors for hospital discharges and transfers, and automatically contacts housekeeping when a bed needs to be cleaned and a room turned over. Hess says the old system involved a person taking a count of beds at the end of the day by walking the floors and peeking inside rooms. In order to demonstrate how the system works now, he turns to his computer screen, which reveals a chart showing six rooms currently available for cleaning. Hess sees that housekeeping has been notified and that two of the rooms are in the process of being cleaned. “TCCH’s bed management workflow has reduced the number of manual steps by 50 percent, resulting in increased efficiency and productivity,” Hess reports.

“There is a tremendous amount you can do with the workflow engine. With Siemens, we have a very active work group. Siemens can create model workflows for any hospital for just about any bottleneck. We’re creating workflows for everyone. Because of our arrangement with Siemens, they take the work we’ve done and make it generic. This is the future,” Hess says.

Tim Friend, a USA Today reporter for 17 years, is now a freelance science and medical writer based in Alexandria, VA, USA. He is the author of Animal Talk: Breaking the Codes of Animal Language, and has just finished a second book on the discovery of a new life form on earth, titled The Third Domain: The Untold Story of the Archaea and the Future of Biotechnology.