The Chester County Hospital: Case Study

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EXECUTIVE SUMMARY

The healthcare industry has been slower to adopt Business Process Management (BPM) than other industries. However, The Chester County Hospital (CCH) has distinguished itself by not only implementing workflow management technology in a healthcare setting, but by customizing and supplementing that technology with its own home-grown applications. The result is a workflow system that integrates clinical, operational and financial processes to support patient-centered care. In addition to meeting the primary goal of providing safer, more efficient care to patients, BPM has enabled CCH to improve working conditions for employees, dramatically increase productivity, achieve higher levels of cost optimization, and become a competitive force to reckon with in the local healthcare community.

Note: This case study was originally submitted to the 2006 Global Excellence Awards for BPM and Workflow, where it won the prestigious Gold Award for North America.

OVERVIEW

While other industries have embraced BPM, healthcare has been slow to use BPM to reengineer its processes, in large part because the very nature of the industry has not lent itself to such an endeavor. Healthcare is not a finite, stationary industry with clearly defined, static procedures. The constantly changing variables involved in patient care, along with the mobility involved in the administration of that care, make it much more challenging to apply workflow procedures. Ironically, the need for integrated workflow management is probably more vital in healthcare than in virtually any other industry, because in few other industries can such processes mean the difference between life and death as they can in a healthcare setting.

The Chester County Hospital is acutely aware of the need for workflow technology in healthcare, and has made its mark in southeastern Pennsylvania by achieving all-around excellent results in implementing BPM. Located in West Chester, Pa., with roots dating back to 1892, CCH is a provider of a full network of healthcare services including a 234-bed not-for-profit acute care hospital; home care; and many other ancillary services.

Faced with the challenges of increasing patient safety, efficiency and cost-effectiveness, and meeting the demands of increasingly sophisticated and knowledgeable healthcare consumers, CCH discovered that BPM was one of the keys to the survival of a healthcare system in the 21st century.

CCH implemented what would become the foundation for its workflow management portfolio: the Soarian® health information solution from Siemens Medical Solutions, which integrates the TIBCO iProcess Engine into its core functionality. Soarian combines clinical, financial, diagnostic and administrative processes across a healthcare enterprise. CCH's IT staff took Soarian a step further by creating their own, customized applications to add on to Soarian to meet the specific,

unique needs of their facility. The result came to be known at CCH as 9ADMIT, a workflow system that integrates patient care with Web platforms, legacy systems, and telephone and paging systems. 9ADMIT can be thought of as a vestibule with various rooms branching off of it; the system launches at Admission and then takes the data that comes in through the Soarian system and routes it to different workflows based on predetermined criteria. Once launched, the system follows the patient through his or her stay, constantly listening for data, displaying that data for the people who need it, and ensuring that the next steps in the process are taken. Like a guardian angel of sorts, the system always knows where the patient is in the continuum, where he or she should be next, and what steps should be taken for his or her care.

Two workflows in particular have yielded enormously valuable results for CCH: Bed Management and Infection Control.

KEY BUSINESS MOTIVATIONS

The primary motivation for adopting workflow management at CCH has been as basic as the very essence of what drives just about every individual who enters the medical field: the desire to make people well, and to do so in the most safe and effective way possible. In addition, other motivating factors have been challenges that CCH, along with the healthcare industry as a whole, has faced in recent years—rapidly escalating costs, aging patient populations and therefore more chronic diseases, human resource shortages and increasingly complicated work environments. Also, patient expectations have dramatically risen over the past several decades, compelling healthcare providers to search for ways of providing increased customer service. As the Baby Boomer population is aging and consequently consuming more healthcare, they are demanding quality and convenience that their parents and grandparents would not have thought to expect. Moreover, the Internet has provided individuals with the ability to access healthcare information on their own, and has created savvy healthcare consumers who are prepared to take their business to the provider who will give them the highest level of service and the greatest probability of recovery.

CCH has discovered that the key to meeting these challenges is integrated workflow management—the process of seamlessly moving patients, information and resources throughout the healthcare continuum in a way that was never before possible.

KEY INNOVATIONS

At its most basic level, workflow management takes the vast amount of scattered, multisource data that is available in a healthcare system and moves that information throughout the enterprise so that key clinical and administrative information can be shared, interpreted and analyzed. The result has been an enormously positive impact on both clinical and business outcomes. For each user at CCH, physician, nurse, executive, etc., the workflow-engineered IT system provides the right information for the task at hand. Rather than having to use a string of 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 "watches over" the patient throughout his or her stay, constantly capturing data to guide the patient's care from one step to the next.

While CCH has applied a variety of workflows to its processes, and continues to develop new ones, two workflows in particular have reaped important positive outcomes: Bed Management and Infection Control.

Bed Management: Impact on business

The availability of beds and lack thereof is one of the greatest sources of bottlenecks in a hospital environment. Emergency departments and recovery rooms are full of patients who are simply "waiting for beds." Ultimately, these delays have the potential to increase the length of patients' hospital stays and require staff to work over and beyond their normal hours. CCH has used Bed Management workflows to reduce turnaround time from the moment a patient leaves a bed to the moment the next patient can be admitted to that bed. The hospital's Bed Management system follows patients throughout their stays and alerts key departments, such as Nursing and Environmental Services, regarding transfers and discharges. By reducing wait times for beds, CCH is getting patients to the proper care setting that their conditions require, and providing more satisfying in-patient experiences for them.

Bed Management: Impact on Process

The manual handoff of tasks from person to person is a process that is susceptible to human error. Prior to the use of BPM, the Bed Management process was an extremely complex and inefficient process, encumbered by a host of these manual handoffs and tasks. A unit secretary would need to enter transfer or discharge information into the system and then begin a manual process of documentation and phone calls, notifying several departments and individuals that a patient had vacated the room and the bed needed to be cleaned. Once the bed was cleaned and ready for a new patient, another series of phone calls needed to be made. Additionally, both the unit secretary and housekeeping staff utilized several documents to track the response and steps in the process. This cumbersome system often required nurses to perform many extra steps that took them away from their primary duty of caring for patients.

CCH's Bed Management system has automated many of the manual processes involved in Bed Management and, as a result, the hospital has experienced a 50 percent reduction in the manual processes involved. The improved workflow process begins with the same step as the unautomated process: the unit secretary enters the discharge or transfer order into the system. But that's where the similarity ends. From that point on, the subsequent steps, notifications, monitoring and progress of the workflow are totally automated, ending with the housekeeper entering a numeric code into a telephone, signifying that the bed is cleaned and ready. This has also freed housekeepers from having to respond to overhead pages and find phones to obtain work assignment details, and has diminished nurse involvement in the bed cleaning workflow, allowing them to focus on the care of their patients.

When the bed is emptied, the workflow process automatically starts multiple activities. The Nursing Supervisor is called via a text-to-speech alert to her IP telephone and asked to give the cleaning a priority level: 1= 45 minutes, 2 = 30 minutes, 3 = 15 minutes. The system updates a Web-based electronic "Bedboard" so everyone knows the exact status of the hospital's bed situation. It also accesses reference tables to see which housekeeper to contact based on the floor, day of the week, and shift. The appropriate housekeeper is alerted of the empty bed and its priority via a text pager. The housekeeper indicates that the cleaning is started by dialing to a specific number from the bedside phone and pressing the numeral

"1." He indicates the bed cleaning is complete by dialing the same number and pressing "2." The workflow automatically contacts the nursing supervisor and updates the Bedboard when the room is ready. If the bed cleaning is not started within the specified time, the housekeeper is re-paged, along with the Housekeeping supervisor. Both the Nursing and Housekeeping supervisors utilize wireless tablets to have up-to-the-minute status information to manage their people, and to interact with the workflow engine.

The Hospital has also built safety checks and an alert mechanism into its Bed Management workflow in the form of Business Activity Monitoring (BAM). As already mentioned, an escalation path is created so that if a bed is not cleaned in a predetermined amount of time, an alert is sent out at certain time intervals to keep the process moving. Furthermore, the system automatically notifies the IT staff of an issue if the pages do not go out within 15 minutes. Every day the BAM system generates an activity report for the previous day and sends it to the director of housekeeping, the vice president of support services and shift supervisors, who can review the reports and determine if there are bottlenecks in the system and who or what is causing them.

CCH brought in an external consultant to conduct a pre- and post-workflow time and motion study of the bed cleaning process. The consultant chose to focus on the key business issue of bed availability on the hospital unit that had the biggest bottleneck, Telemetry, during the peak discharge times between 2 and 8pm. His study showed that the workflow automation process changes resulted in six beds being available to receive patients an average of two hours earlier than compared to the pre-workflow status.

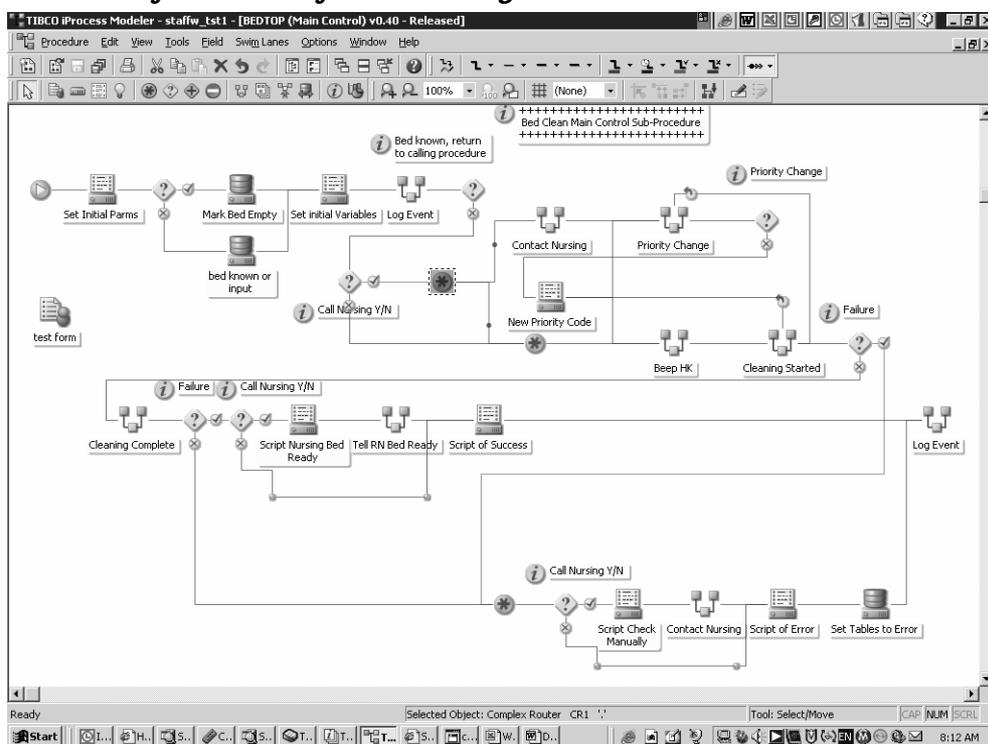## Bed Cleaning Process Pre-Workflow

THE CHESTER COUNTY HOSPITAL
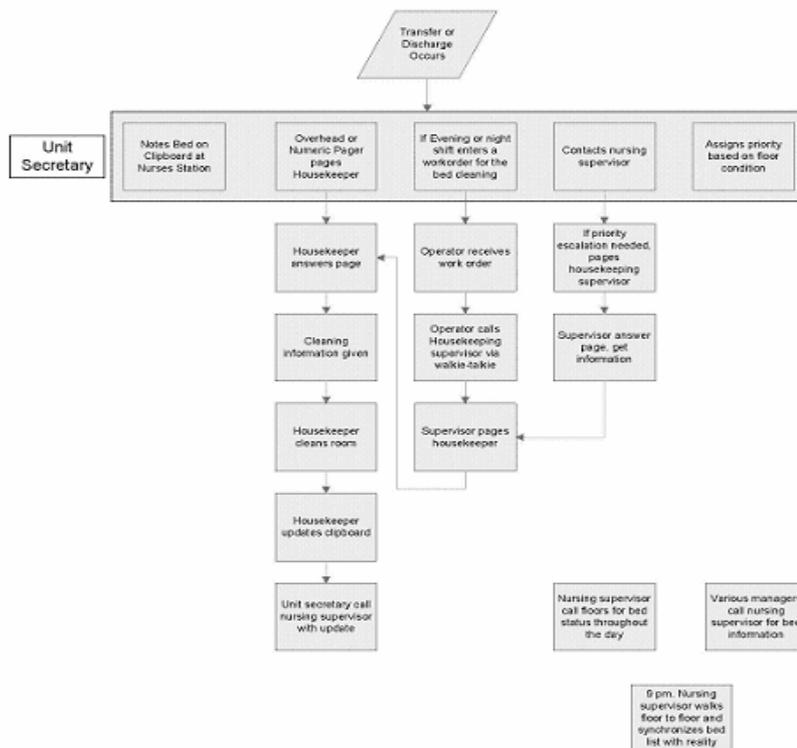
The following charts display before and after scenarios of CCH's Bed Management workflow processes. Notice the free floating boxes on the pre-workflow diagram. They represent manual steps that were not connected to the rest of the process.

Bed Cleaning Process Post-Workflow
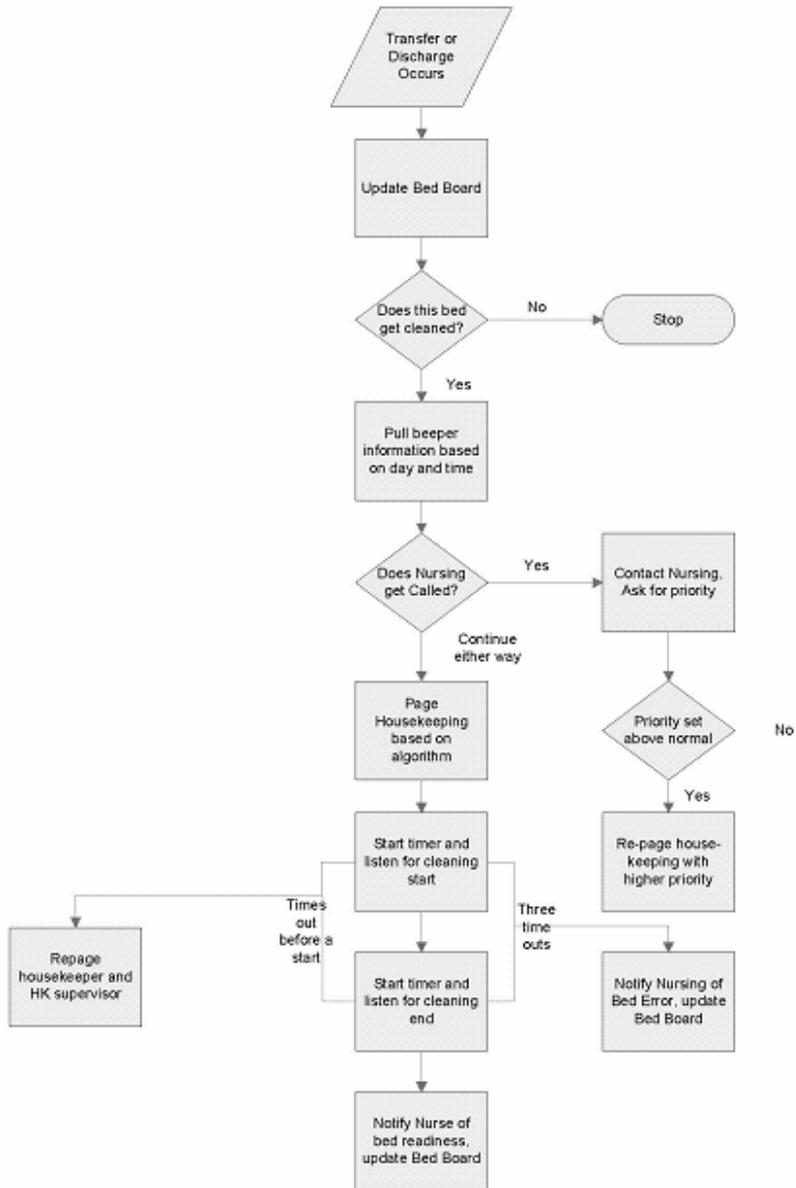
The graphic following shows the current main workflow screen for bed management.

Main Workflow Screen for Bed Management

Bed Management: Impact on technology

The original bed cleaning process utilized functionality that required human interaction with every step. It included work lists placed on a clipboard and a nursing census list that was crossed out and edited throughout the day. Pages were made to the housekeeper via an in-house paging system to a numeric pager. This method required someone to manually call the system and insert data for paging. The housekeeper would then need to return the call for information. A work order system created in Microsoft Access was also used. This system would print out a requisition to a designated printer in the housekeeping office, prompting either someone in the housekeeping office or the hospital operator to page the housekeeper again. The nursing supervisor used an IP phone and the housekeeping supervisor used a walkie-talkie. In all cases, information was given or obtained via human-initiated contact.

The BPM automated system utilizes much of the same communication technology, but now the steps are automated. There were several technology changes made to allow this to occur. Numeric pagers were replaced with text pagers, an Intel Dialogic analog telephonic card was purchased, and a Web UI was created to report the status of all beds within the institution. The telephonic card was used to automate pages to the existing paging system, to send text to speech messages to individuals via the telephone, and to receive feedback via the phone's keys. The Access database was removed from the process since the metrics were captured directly within the BPM process. The walkie-talkie was discontinued and wireless tablets were given to the nursing and housekeeping supervisors respectively to view the Bedboard Web UI. This UI was made available to all appropriate personnel and continually updated by the BPM system. In this way, the process, discussed above, was automated and controlled, reducing variation and the potential

for human error. Key to the success of this endeavor was the using of existing technology (phones and pagers) while removing manual tasks from the staff's workload.

Infection Control: Impact on business

It is a well-known fact that the longer a patient stays in the hospital, the greater he or she is at risk for hospital-acquired infections. This is particularly significant in facilities like CCH, where 85 percent of the rooms are semi-private. In such an environment, patients are vulnerable to infections potentially carried by their roommates. Hospital rooms are full of objects that provide breeding grounds for bacteria, from telephones to food trays, and from toilets to flower arrangements. Therefore, it is of utmost importance, and in some cases can even mean the difference between life and death, for a hospital to identify as early as possible any patients who are carrying infections that require isolation, and to communicate that fact to all the staff who will be involved in these patients' care. This early identification of patients with isolation-requiring infections not only protects other hospital patients and the hospital staff from contracting infection, but also can reduce the length of stay for the infected patient. Obviously, the sooner the patient is placed in isolation and receiving the proper antibiotics, the sooner he or she will recover.

There are two major infections that, once contracted, cause a patient to be considered a carrier for life: Methicillin Resistant Staphylcoccus Aureus (MRSA) and Vancomycin Resistant Enterococcus (VRE). It is imperative that patients who carry these organisms are properly isolated until their current contagiousness can be determined. If either of these organisms is spread to another person, that person is infected for life. Furthermore, since hospital patients are invariably in a compromised state, any newly acquired infection could cause serious complications or even death. It is tragic when the hospital inadvertently infects the patient. The central reason for creating the isolation workflow was to prevent this from happening.

It is also important to identify patients who, although previously active with a contagious infection, no longer require isolation. Putting a patient in isolation unnecessarily leaves already-scarce isolation rooms unavailable to patients who really need them and causes bottlenecks in bed availability. In addition, due to the extra supplies needed (gowns, masks and gloves) and the additional time involved for staff members to "gown-up" before entering isolation rooms, the hospital incurs extra costs for keeping a patient in isolation—approximately $100 per day.

Infection Control: Impact on process

Before CCH implemented an Infection Control workflow, the identification of patients needing isolation was a hit-or-miss, ineffective process. Admission assessments were done after the patient was placed in a bed. At that point, if the assessment revealed that the patient was a carrier of a contagious infection, the patient had to be moved into isolation, after already having exposed a roommate and the staff to the infection. This also involved having to reclean the contaminated bed, causing more bottlenecks in bed flow. Moreover, the staff that would care for the patient in isolation was caught unprepared, and in some cases was not fully stocked with the proper isolation supplies.

On the flip side, the old IT system would flag cases where cultures were positive, but not those that were negative, since theoretically negative results were not a reason for action. In the case of Infection Control, however, negative results are

just as important as positive ones, since knowing that a patient does not need isolation is just as important as knowing that a patient does, for reasons already outlined above.

To determine its effectiveness at Infection Control, the IT staff at CCH conducted a study on patients entering the hospital with MRSA. Four percent of adult patients entering the hospital have a history of MRSA, and they account for 8 percent of patient days. In a study of 30 patients over a four-week period, approximately 25 percent of MRSA patients with prior positive results who should have gone into isolation upon admission were missed at initial bed placement. This necessitated an immediate transfer to isolation status. If they were missed altogether, this would place other patients and hospital workers at risk for the infection.

Now that CCH has implemented an Infection Control workflow, when a patient comes in with a history of a contagious infection, the system places an automated phone call to alert the nursing staff to take precautions, to perform a culture immediately to determine if the patient requires isolation, and to explain the situation to the patient's family members. The system then takes care of all the operational downstream work, such as notifying the Laundry Department to send extra isolation supplies to the patient's room.

The following charts display before and after scenarios of CCH's Infection Control workflow processes.
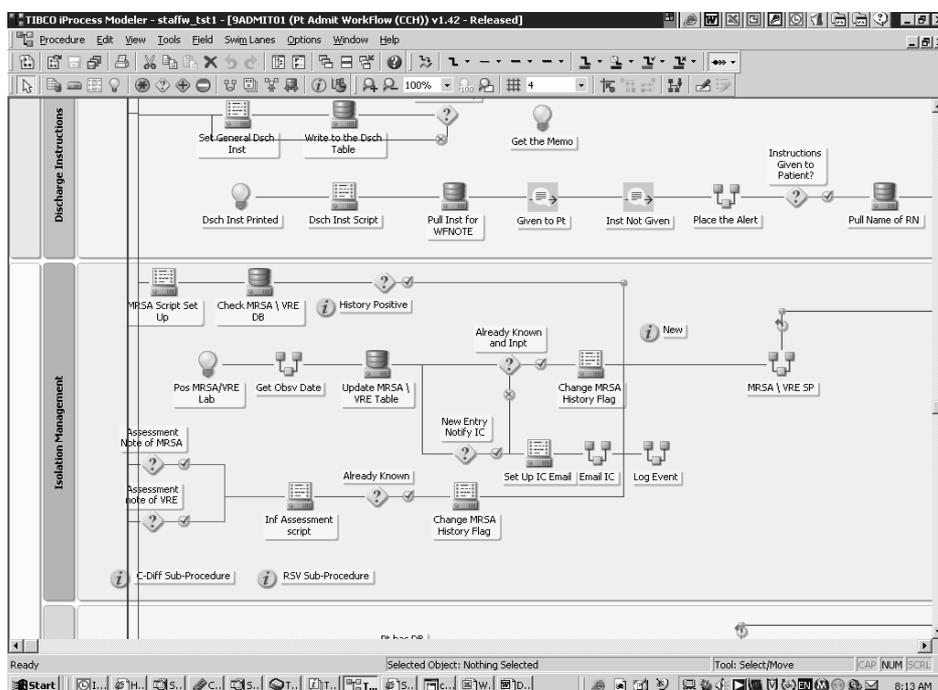
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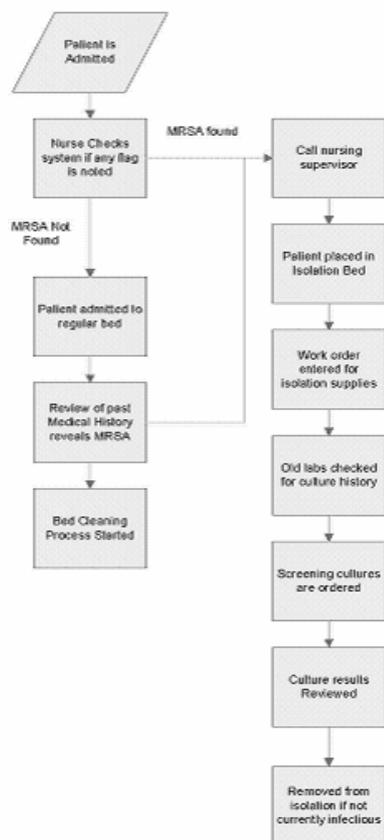
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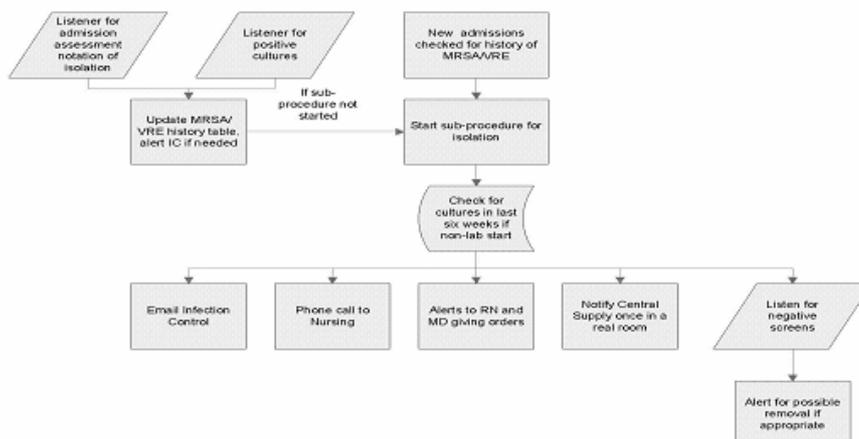
The graphic below shows the current main workflow screen for infection control.

MAIN WORKFLOW SCREEN FOR INFECTION CONTROL

INFECTION CONTROL: IMPACT ON TECHNOLOGY

The original Infection Control process utilized little technology and was heavily dependant on human action at almost every step. Prior to the implementation of the isolation workflow, a database flag was set in the patient registration system if the patient was identified with MRSA or VRE. However, this flag did not appear in any clinical computer screens and therefore clinical staff were unaware of the patient's status. Also, the Infection Control Department manually entered the flag on a periodic basis (often many weeks after the fact). This master list was kept on the Infection Control Department's computer, and was printed out and distrib-

uted to clinical staff. As a result, if a patient was newly diagnosed with the MRSA/VRE infection and subsequently readmitted prior to the publishing of the new list, their current status would not have been evident at either admission or during initial review on the floor. Also, new positive lab values were printed to the floor's printer and were to be accompanied by a phone call from the Microbiology Department. Negative lab values were printed and needed to be interpreted by the nurse for potential relevance. In either case, values that needed to be acted upon necessitated a series of phone calls and work orders.

The BPM system was configured to automate these same tasks with little human intervention. The master list of infectious patients was placed in the SQL Server database, updated automatically by the BPM engine, and made available through the institution via a Web UI. Every patient being admitted is checked against the master list and if a match is found, the system performs the necessary steps. A phone call is placed using the above-mentioned telephonic interface to the nursing supervisor. E-mail notification is sent to the Infection Control department via the Microsoft Exchange server. Clinical notifications show up on the Soarian clinical system and on the Bedboard UI noted above. Notifications to ancillary departments, such as Laundry for isolation gowns, occur automatically via printed media. Every new lab value is evaluated for relevance. New labs with critical values are acted upon with proper notifications and the master list is immediately updated. Again, a key technological aspect of this process's success has been the ability to coordinate existing technology with the BPM system and to remove many of the manual steps.

The Impact of Workflow on Users

In the case of both Bed Management and Infection Control, workflow has reduced the number of manual steps within the process of identification, notification and tracking. This in turn has reduced the time and effort of the end users, making them more efficient and productive and allowing them more time for the care of patients rather than spending time on the process.

Bed Management has reduced the number of manual steps by 50 percent. It provides an enterprise-wide, up-to-the-minute status for the care delivery team. It automatically manages nursing alerts, prioritization, and housekeeping staff assignments, and provides the supervisors with an automated departmental management and comprehensive reporting of activity for analysis. Infection Control has assured that every patient with a known MRSA or VRE condition is managed and isolated properly. It assures that isolation bed placement is optimized by appropriately placing all patients in the proper status but only for as long as they need to be there. Proper care is automatically directed, assuring efficient, effective and safer patient care.

The following chart indicates the volume of patients that have been impacted and the automated alerts that have been accomplished by the Bed Management and Infection Control workflows at CCH:

Number of patients monitored at any given time	1,200-1,500
Number of beds cleaned (since October 28, 2004)	37,500+
Admissions checked for MRSA since December 2004	38,500+
Number of pages sent out	181,000+
Number of phone calls	77,500+

System Configuration

Most workflow examples that we have seen are predicated on end-user interaction with a computer terminal. The key to CCH's BPM success was less the choice of technology (which telephonic card or .NET versus Java) but rather configuring the BPM process to interact with the end-user using the technology that they already employed. This is most apparent when BPM is used to manage workflow for support departments that are never in front of a terminal but who need to be able to receive assignments and provide updates to the system.

The chart below provides a description of CCH's BPM system.

The Chester County Hospital

BPM Architecture
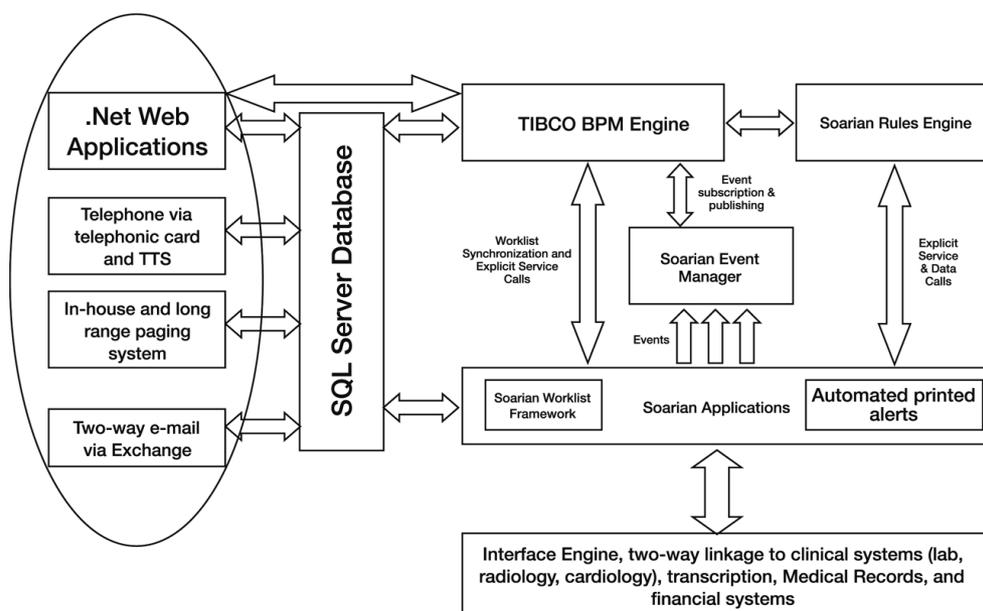
HURDLES OVERCOME

Management hurdles

As CCH began to implement workflow processes, there was an immediate positive buy-in from managers. There were, however, some challenges, the first of which was to educate key members of the hospital on the capabilities and power of the workflow management tools. The next challenge was to determine which processes to analyze and improve upon with workflow management, and to ensure that management was committed to the initiative and able to align the appropriate resources to analyze, design, test and monitor all workflows.

Business hurdles

One of the biggest hurdles that the CCH IT Department encountered in setting up an integrated workflow management system was achieving consensus on the proper protocols to follow, since there is such a huge variation in medicine on how to deal with certain illnesses, etc. Another challenge was determining just how much to automate in the workflow process. Some processes would simply

need to be refined, while others would require a complete redesign. It was very important for CCH to get a buy-in from doctors for the workflow design, and to get doctors to trust the system enough to perform functions that had previously been performed by people. The IT staff needed to strike a balance between making processes simpler and more efficient for doctors and yet not automating processes so much that it took away or limited doctors' control.

Another challenge was setting up a workflow system in an environment that is not a stationary setting where workers sit at computers and perform most of their job functions right at their desks or work stations. A healthcare setting by its very nature is very mobile. Employees, from housekeepers to surgeons, do not work in one place, but rather depend on pagers, phones and laptops to carry out their duties. It was challenging to take traditional workflow systems and modify them so that they could be effective in a clinical setting, where workers are like moving targets and the steps involved in performing their job duties vary from hour to hour and are as unique as the patients they serve.

Technology hurdles

In creating its workflow management system, CCH's greatest technological challenge was to build a whole portfolio of workflow modules to add on to the Soarian workflow engine and make those modules work seamlessly together, rather than building standalone pieces that were independent of each other. The next technological hurdle to overcome involved putting a monitoring system in place as a fail-safe for the system. Again, in few other industries does the failure of a workflow system have the potential to mean the difference between life and death, as it does in a healthcare environment. Hospital staff relies on this system, not just during normal business hours, but 24 hours a day, seven days a week, 365 days a year. The IT staff was challenged with building an early warning system for business interruption occurrences that would provide a level of vigilance far beyond anything that was already available out of the box.

As a result, at CCH, there is a built-in escalation management system that goes into action the minute it detects a lock-up or failure in any of the many handoffs to legacy systems. Indeed the stability issue has rarely been with the BPM engine, but rather with these legacy systems. As mentioned in Bed Management, a comprehensive monitoring system using a .NET Web UI, text paging, and e-mail notifications was created to monitor the database and system activity. This monitoring system resides on a separate server and continually "pings" the various processes and hardware for proper operation.

BENEFITS

Cost Optimization/Increased Revenues

In a healthcare setting, particularly a not-for-profit institution such as CCH, the traditional business model of increasing revenues does not directly apply. Most payers pay on a fixed-fee basis, either a certain amount per approved day of care or per case, regardless of the care given. When it comes to financial matters, the focus must be on optimizing cost so that there is a positive margin on each case. So, rather than seeking a "profit," hospitals need to focus on decreasing expenses and then seek to increase the volume of patients. If efficiency is not achieved, the hospital could experience a loss with each patient admission and increasing volume would actually hurt the institution. The constant goal is to provide excellent care, to contribute to a population of healthier people, and to do so in a safe and cost-effective manner. CCH has made great strides in meeting this goal through its workflow management system.

As already discussed earlier in this case study, the workflows that CCH has put into place have helped to ensure that the hospital is making the most of its operating dollars by eliminating waste and spending money where it is most needed. The Bed Management workflow, for example, has eliminated 50 percent of the manual steps involved in the bed cleaning process and increased the timeliness of bed availability. This has decreased the costs associated with overtime hours, lengthy hospital stays, and bottlenecks caused by a shortage of clean beds, which often requires diverting patients to other hospitals. The Infection Control workflow has reduced the extra costs that are incurred from hospital-acquired infections, such as lengthier stays and potential lawsuits. It has also saved money by eliminating the unnecessary use of isolation rooms and isolation supplies which, as stated earlier, costs an additional $100 a day.

The bottom line is that workflow technology has allowed CCH to provide better, safer care to its patients, and thus meet or exceed national regulatory requirements for obtaining the maximum reimbursement from insurance providers.

Productivity Improvements

CCH's Bed Management workflow system has automated many of the manual processes involved in Bed Management. All the steps, notifications, monitoring and progress of the workflow are totally automated, with only the housekeeper needing to enter into a telephone that the bed is cleaned and ready. This has freed housekeepers from having to respond to overhead pagers and find phones to respond to requests, and has diminished nurse involvement in the bed cleaning workflow, allowing them to focus on the care of their patients. It also has diminished the bottlenecks that occur due to a shortage of clean beds, and has reduced patients' wait time to get into a room and begin receiving the proper care.

The Hospital's Infection Control workflow has greatly improved productivity by providing staff with an early warning system to identify patients who need/do not need isolation rooms. The system manages tables that identify which patients have MRSA and VRE, noting the site of initial and last infection, valuable information from a clinical perspective. The ability to immediately identify patients who require isolation allows staff to save time through advance preparation. For example, the Laundry Department is notified to send extra isolation supplies to the patient's room. The ability to identify patients who no longer require isolation has decreased the incidence of using isolation rooms and supplies unnecessarily, saving time and money.

COMPETITIVE ADVANTAGES

The implementation of BPM at CCH has gained competitive advantages for the hospital as both an employer and as a healthcare provider. By becoming a hospital of distinction that has set itself apart from its competitors, CCH has been able to attract the best and the brightest staff, and has become the hospital of choice for the surrounding community.

In light of the current shortage of healthcare workers, the ability to attract quality employees is critical. In general, those who select healthcare as a profession tend to be individuals who are driven to help others. When their jobs are weighed down with non-clinical duties, they tend to become frustrated and dissatisfied. By putting efficient workflows in place, CCH has been able to provide employees with a work environment that allows them to focus on what they enjoy the most: patient care. Demonstrating its workflow efficiency at nursing recruitment venues has given the hospital a definite advantage in attracting prospective nursing employees. Likewise, young physicians who have been educated in a time when workflow

has become increasingly important are seeking to affiliate themselves with hospitals that have streamlined processes in place that make it easier for them to practice medicine. Thus CCH has increased its ability to attract physicians to its staff.

Workflow management has also provided CCH with a competitive advantage in attracting patients. As discussed earlier, today's healthcare consumer, particularly Baby Boomers, are much more demanding of quality care, and are much more informed about healthcare issues. Publicly reported data on hospitals is available with the click of a computer mouse, and consumers do their homework in deciding where to go for healthcare services. CCH believes that BPM will help in decreasing not just infection rates but, at the end of the day, reduce morality rates as well. Thus, incorporating BPM into its strategy to increase patient safety has definitely improved CCH's ability to attract patients.

BPM has set CCH apart from competitors, attracting employees and patients alike. In so doing, the hospital has moved competitive goalposts and has caused a healthy drive for other hospitals to stay in the game by following suit with efficient workflow management processes.

PLANS TO SUSTAIN COMPETITIVE ADVANTAGE

CCH continues to develop the BPM workflows. Since the healthcare industry continues to change, CCH has purposely designed its workflow management system with evolution in mind. The IT staff plans on adding pieces to the system so that ultimately there will be workflow procedures in place to not only manage business processes but to manage evidence-based medicine and clinical care wherever possible. The hospital has already added dietary, diabetes, Congestive Heart Failure, admission assessment, outpatient, microbiology results, automated nursing notes, automated discharge instructions, and smoking cessation education workflows. It is currently working on drug management, heart attack, pneumonia, sepsis, radiology test preparation, and Emergency Department workflows. CCH strives for the creation of workflow-enabled patient care processes that cover all aspects of care.