Taking Electronic Document Management beyond the HIM Department

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Saint Vincent Health System's HIM department checked its document imaging system into the emergency room. Together, the two departments saved nothing but time. The program's success led to an enterprise-wide electronic document management system.

In 1988 Saint Vincent Health System was among the first hospitals in the US to implement document imaging within its HIM department. The hospital undertook the medical records imaging system (MRIS) project to decrease costs, improve compliance with medical record regulations and standards, and increase the availability of medical record information throughout the health system. The project's success paved the way for an integrated electronic document management system (EDMS) for the entire enterprise.

Saint Vincent is a 366-bed, nonprofit, tertiary-care hospital and regional medical center located in Erie, PA. The hospital provides a wide range of services via a main medical center, rural clinics, an extensive primary-care medical group, and an ambulatory surgery center. To date, Saint Vincent has archived more than 44 million images in the EDMS and expanded use of the system into the business office, outpatient, and ambulatory care settings, including the emergency department (ED). This article describes the evolution of the EDMS in the Saint Vincent ED during a 10-year period.

Moving into the ED Environment

With more than 62,000 visits tracked in 2002, the Saint Vincent ED is the busiest in its tristate region. The timeliness of information provided to ED staff is critical both for clinical care and correct triage and disposition. In 1992, with the MRIS fully functional and loaded with four years of retrospective data, the HIM department approached ED medical and nursing directors to determine their interest in a pilot program that would extend MRIS beyond the medical record department for the first time.

The pilot project was offered as a supplement to the existing ED process for retrieval and review of old medical record information. Under the existing process, the registrar placed telephone requests with the HIM department for records, and printed copies of the three most recent pertinent encounters were hand-delivered to ED upon demand. The labor intensity of this process, coupled with the time and materials necessary to provide the information to the triaging physician, made this particular area a prime candidate for a document-imaging pilot program.

ED staff was initially resistant to taking responsibility for the old record retrieval process, even on a supplementary basis. In 1992 the size of the standard MRIS workstation was much larger than the PCs in ED, requiring a special area to accommodate the 21-inch monitor. ED staff was also concerned that the single workstation would create a bottleneck when multiple records were required at one time. Physicians and nurses alike also questioned the user-friendliness of the application, given that the system was initially designed for HIM staff, not clinicians.

To address these concerns, the HIM department stressed that the pilot program would run parallel to the existing process. An environmental assessment with the engineering department was undertaken to locate a suitable area for the MRIS workstation, and the costs of the initial construction were absorbed by the HIM department. Lastly, the information technology department created a simplified graphical user interface for ED users that decreased the complexity of the search and record retrieval functions.

Training the ED Staff

In fall 1992 HIM staff began training ED secretaries, registrars, RNs, and physicians on the MRIS system. As a patient was registered, ED staff learned how to search for prior medical records using the patient's medical record number or name and date of birth. If a pertinent record was located, ED staff submitted a print request that sent the record to a printer in ED.

Although printing records from an imaging system may seem to be a costly or inefficient use of the technology, the pilot project team recognized that the availability of the technology would change retrieval patterns in the department and eventually decrease the consumption of paper. For instance, physicians now able to view certain records such as EKGs onscreen avoided the unnecessary printing of an entire record for a single document. Following triage and patient disposition, the records were either returned to the HIM department for disposal or were forwarded to the inpatient unit with the patient and then returned to the HIM department postdischarge for disposal.

Evaluating the Pilot

After a six-month pilot, the program was determined successful, but it did require some improvements. One refinement was the creation of an ED physician subset, which reduced the size of a typical medical record print request by 70 percent. ED physicians worked with HIM staff to define the documents required most often in an old medical record review. The subset was then provided as a selection on the document retrieval screen, offering users the choice of requesting an entire medical record, a single type of document, or the ED subset. The subset became the default request. Given the digital storage technology in use at the time, the creation of the ED subset also decreased the retrieval time of the images and improved timeliness of the information.

While the subset matched the needs of the emergency department, it proved incomplete for the inpatient units, which were accustomed to receiving complete old medical records for admitted patients. Attending physicians on the floor required a greater level of detail from the old medical record review than did the physicians in ED. The HIM department, in collaboration with the medical record committee, created the ED Completer Subset. Upon learning that a patient was to be admitted to inpatient, ED staff requested the completer subset and provided it to the inpatient unit along with the initial ED subset. Combined, the two subsets met the information requirements of the attending physicians.

Expanding Use of the Technology

The success of the pilot project was not the end of Saint Vincent's electronic document management journey. An evaluation of the overall ED medical record process undertaken in 1994 identified opportunities to improve the operational effectiveness of both the HIM and the emergency departments in providing medical record information to physicians. The next round of goals sought to decrease reliance on printed records from the MRIS, increase physician use of the system, and improve access to MRIS terminals for all staff.

The information technology (IT) department at Saint Vincent, which largely developed and supported the MRIS system, was engaged to determine opportunities for increasing access to the system, including within the patient treatment area. IT and ED staff concluded that space and cost considerations prevented placing the large monitors and specialized hardware required for the imaging system at bedsides. This led the IT department to explore the possibility of deploying the MRIS system in a PC-based version, allowing the imaging application to be accessed via a standard Windows-based PC with a 17-inch monitor. The technical team rolled out this scaled-down version of MRIS, called Electronic Record Imaging Companion (ERIC), in a confined pilot group of users in early 1995.

Several PCs were added at bedsides and at "mini-nursing stations" outside the central nursing station. The ERIC icon located on the desktop allowed any staff from physician to nurse to clerk to access medical record information electronically from wherever a networked PC was located. Though it was available on any PC, the ERIC application required the installation of an additional piece of software (a viewer) directly on the workstation. It was rolled out to workstations specifically identified by staff as being conveniently located and not heavily relied on by users for other competing applications.

ERIC's deployment was a resounding success. The HIM department was able to decrease full-time-employee support to ED for the purpose of pulling and printing old medical records by 28 hours per week; these resources were reallocated to assisting ED with concurrent record maintenance issues. ED physicians and nurses embraced the new application with enthusiasm.

ERIC's success improved the working relationship between the emergency and HIM departments as a whole. Tangential projects facilitated through this improved relationship included a concurrent coding program designed to assist ED physicians in improving documentation to ensure proper coding and billing for both hospital and physician-based services. In addition, a part-time clerical resource was allocated to ED to assist staff with improving the completeness and timeliness of the concurrent ED record by guaranteeing accurate filing of lab and X-ray reports, flagging documents requiring physician actions such as dictation or signature.

2002 and Beyond

Improved imaging technology, the advent of storage area networks, and decreased hardware costs have enabled Saint Vincent to expand the use of document imaging and electronic document capture even further. In 2002, 32 million images from the original MRIS system were converted to a vendor-based, enterprise-wide EDMS during a nine-month period. Consolidating images in a common storage platform enables Saint Vincent to archive and retrieve electronic information originating in the clinical setting as well as the business office using a single system.

Work flow tools now implemented on top of the new storage platform move information intelligently throughout the enterprise based upon the process flows and unique user requirements in the health center. A Web-enabled application provides remote access for users in areas previously unable to be reached due to connectivity issues and security concerns. Soon, physicians will be able to sign any type of document captured by the EDMS, from dictated reports to oral orders, using a single system for authentication.

And lastly, real-time interfaces from a variety of clinical and business office applications are moving information at Saint Vincent to staff throughout the health system at record pace, bridging an information divide that had once been deemed too costly and labor intensive to address.

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