Optical Storage-based Document Imaging Technology and the Computer-based Patient Record

by Mary Brandt, MBA, RRA

Just how optical storage-based document imaging systems fit with the vision of the computer-based patient record (CPR) is the subject of some debate. To help AHIMA members better understand the issues involved, a workgroup was formed to address this issue. Included were representatives from AHIMA's Technology Committee, imaging users, vendors, consultants and educators.

Our sincere thanks to the members of this hard-working group: Cheryl Berthelsen, PhD, RRA: Mary Brandt, MBA, RRA; Jean Corley, MBA, RRA; Anita Doupnik, RRA; Deborah Kohn, MPH, RRA; Eunice Little, MS, RRA; Mary Ellen Mahoney, MS, RRA; Stephanie Massengill, RRA; Kelly McLendon, RRA; Ann Peden, MBA, RRA, CCS; and Connie Tohara, ART.

The diversity of the workgroup provided a variety of viewpoints and some lively discussions. We examined the types of patient record systems currently in use and those that are evolving. Then, we tried to evaluate how document-imaging systems fit with the CPR. Finally, we identified some additional considerations for potential users of document imaging technology.

Workgroup members Cheryl Berthelsen, Jean Corley, Deborah Kohn, and Mary Ellen Mahoney offer some expanded points of view in their articles, and Kelly McLendon provides some guidelines for evaluating electronic patient record systems.

Patient Record Systems

Evaluating the applicability of document imaging technology in health information management requires consideration of the patient record systems currently in use and those that are evolving.

Paper-based Patient Records: Currently, the vast majority of healthcare facilities in the US rely primarily on paper-based patient records, the traditional form on which records have been kept since the early days of modern medicine. Despite their widespread use, paper-based records are deficient in many areas, including: (1) content, (2) format, (3), access, availability and retrieval, and (4) linkages and integration. The use of computers for managing health information, however, has been a slow evolution. In most facilities, computer support for clinical and financial databases is often fragmented with information stored and processed in systems that are unable to communicate with each other. While the information stored in these computer systems is digital, most of it is printed onto paper for archival purposes.

Document imaging systems are information systems that capture information stored on paper documents and allow immediate, simultaneous access to the information. These systems use laser beams to etch images of the paper document s onto optical disks for archival storage. Data stored on paper documents are digitized by scanning the documents into digital scanning devices-much like facsimile machines-creating bit-mapped images of the paper documents. Bit-mapped images are a series of dots or pixels patterned after the original image.

The documents are accessed through file servers that accept and prioritize requests for the archived images, retrieve the images, and send them to the appropriate workstation for online viewing, transmission via facsimile or other network router, or printing to hard copy. In healthcare, document images are stored on optical disks (typically WORM [write once, read many] disks), which serve as an efficient, long-term, near-line mass storage medium, and complementing magnetic storage.

Generally. There are two types of document imaging systems used to store and retrieve patient records in healthcare. We called one type an "electronic filing cabinet" system and the other type an "electronic patient record" system.

Electronic filing cabinet systems are limited in scope. They facilitate access and retrieval of paper-based records by storing images of the records on mass storage media, such as WORM optical disks. Generally, these systems are limited by their input

and indexing capabilities. All documents are input in to the system by scanning; electronic filing cabinet systems generally do not capture digital, computer-based information from existing systems. Indexing capabilities usually are limited to patient name, number, encounter, or other data field. Some systems are capable of indexing to specific document types within a patient record.

Electronic filing cabinet systems are designed and used primarily to store and retrieve archived, inactive records. As such, they serve as replacement systems for standard and computer-assisted retrieval (CAR) microfilm systems. Electronic filing cabinet systems provide a near-term solution to record access, retrieval, and storage problems associated with paper-based records, but their use does not result in the computer-based patient record (CPR), according to the Institute of Medicine's (IOM's) definition.

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