

Computer-Aided Medical Transcription

Implementation at one hospital improved quality and reduced costs.

by John D. Halamka and Sheila Linehan

Beth Israel Deaconess Medical Center (BIDMC), Boston is committed to paperless medical records and is one of the most wired hospitals in the country, yet only 40 percent of our clinical information is recorded electronically. Inpatient notes are still handwritten, more than 400 paper forms are used during care and many documents appear only in the paper chart. Our five-year goal is to achieve an 85 percent electronic medical record.

Dictation has been highly effective for capturing text information because clinicians can dictate anywhere, anytime, with various devices. However, for our specialty clinics, radiology department, and primary care center, Healthcare Associates (HCA), turnaround times for manual transcription were too slow (often four to six 6 days) and inconsistent. Also, report distribution and printing were unreliable, and already-high costs continued to rise.

We needed technology that would interface with our existing systems (e.g., radiology wanted to maintain its homegrown radiology information system [RIS] report writer) and not require significant disruption to our existing workflow or clinician behavior. We also wanted to improve processes. For example, the specialty clinics couldn't efficiently print documents through the existing online medical record system, so providers wouldn't use it for their dictated documents, making it difficult to retrieve their reports online.

Our solution

In 2002, we implemented computer-aided medical transcription using EditScript from eScript, Needham, Mass. This technology uses intelligent speech recognition to turn clinicians' dictation into accurate, formatted, first-draft documents that medical transcriptionists subsequently review and edit. Because the drafts are formatted according to our standards, transcriptionist checking is primarily for important medical corrections.

For example, our formatting rules require support of the JCAHO "safety first" text expansion standards (e.g., once daily instead of q.d., 5 g instead of 5.0 g), use of Arabic numerals for diabetes types and Roman numerals for heart-murmur grades, and absence of patients' last names in the drafts. Consistent formatting greatly simplifies searching for information and extracting data from transcribed reports with natural language processing technology.

During implementation, we piloted the use of handheld devices. However, clinicians did not routinely check battery levels and lost power during dictation, and they experienced voice cut-offs because of incorrect use of switches on the device, so we decided to use phone-based dictation.

To save our transcription managers the time required to manage multiple outsourced companies, we streamlined transcription contracts during implementation to two vendors. Competitive bidding kept

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costs down, and our ability to monitor the companies improved. We maintained our six-person in-house radiology transcriptionist team.

Our implementation

An IT project team at BIDMC led by Sheila Linehan directed system implementation and worked closely with the medical records staff in the specialty clinics, radiology and HCA. This centralized project team helped, and continues to help, coordinate application support for the multiple users and was a key factor in the implementation's success. IT implementation responsibilities fell into three categories, each of which contained important tasks:

- **Project management:** Determine ROI for participating groups, assess current workflow and provide future-state design to minimize clinician disruption, and maintain liaison between BIDMC users (including clinicians and practice administrators) and the vendor
- **System management:** evaluate and confirm system robustness and security, develop and test interfaces for ADT outbound to the vendor's ASP and results inbound from the ASP to HIS, oversee program changes written by in-house developers for RIS and online medical record to accommodate new interfaces to report writers for these applications
- **User support:** download software and train employees on administrative tools (our in-house leader was trained by the vendor), provide ongoing tier 2 and higher support for BIDMC users (referring issues to vendor's support team only as needed), test and manage software upgrades

Results

Today, more than 20 million lines of transcription per year are processed at BIDMC using the computer-aided medical transcription system. Dictation

from more than 730 clinicians in the three divisions is processed, and more than 89 percent goes through the recognizer to produce first drafts for editing. This volume continues to grow. Our clinicians are very satisfied with the turnaround time and impressed that their dictation/transcription workflow did not need to change.

The cost avoidance achieved in medical transcription was more than \$700,000 for fiscal year 2004.

Turnaround time in HCA was reduced by 82 percent, from 110 hours to 18 hours. In radiology, it averages one hour for STAT radiology reports, achieved by managing the priority rules in the administrative tool.

Report distribution is seamless through integration to our RIS and online medical record. The printing format supports additional letter templates not available through our current online medical record software.

Monitoring and managing transcription costs and processes, including consistency of line counts, have improved through regular reports of such information provided by the system.

Transcriptionist productivity has doubled and in many cases tripled.

The consistency of the reports produced through computer-aided medical transcription helps provide a valuable electronic record that replaces paper.

Over the past several years, BIDMC has implemented many new systems. The most significant lesson we, as IT professionals, have learned is the importance to clinicians of timely, accurately transcribed notes, which help in providing high-quality patient care. ■

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