Computer-assisted Coding Software Improves Documentation, Coding, Compliance, and Revenue

by Sean Benson

Abstract

The use of computer-assisted coding (CAC) software is becoming more common at the point of care. Two main approaches to CAC software have been used—structured input (SI) and natural language processing (NLP). This study focuses on the use of SI software at the point of care and its impact on quality of procedure documentation, codes, and effects on reimbursement for both the professional and facility offices.

Key words: computer-assisted coding, procedure documentation, coding, reimbursement

Introduction

CAC software has become more prevalent at the point of care. A number of studies have been undertaken to measure the impact of structured input CAC software on physician documentation, coding, and reimbursement. This paper will summarize the studies to date.

Background

Correct documentation at the point of care has been a major challenge for healthcare organizations. Clinicians are expected to deliver patient care in a safe and effective manner while also ensuring that all relevant details are captured in the documentation process.

In a typical institution, physician documentation is generated primarily via a dictation and transcription system. The physician dictates the procedure note, a transcriptionist types the dictation, and the physician reviews and signs the transcribed note.

Coding for these procedures can be handled in a variety of ways. In general, the hospital HIM department reviews the transcribed procedure note and, using encoding tools, generates current procedural technology (CPT) and international classification of diseases (ICD) codes. These codes are then entered, either manually or electronically, into a billing system and the bill is sent to the payer.

Physician billing for these same procedures is less predictable. Oftentimes, the physician's office does not employ a coder. Instead, the physician chooses codes on a paper billing sheet, which is then typed into the physician's billing system by clerical staff.

There are many challenges inherent in these processes. First and foremost, the physician is not able to stay apprised of coding arcana and, as a result, does not always know what information needs to be included in the procedure note for coding purposes. The Office of Inspector General for the Department

of Health and Human Services estimates that 45 percent of all payment errors are due to missing or incomplete documentation.[1]

Because physicians may neglect to include necessary detail for coders in their procedure notes, the coders must either query the physician for further detail or simply generate the CPT and ICD codes based upon the documentation. This may lead to incorrect codes being generated and, consequently, incorrect revenue being collected for the facility.

As stated previously, physician's offices do not regularly employ coders. The result is that the office must rely upon the physician's billing sheet for their CPT and ICD codes. The physician may not be able to stay apprised of all coding rules and, therefore, may choose incorrect codes. As in the case of the facility, revenues can be adversely affected.

One solution to these issues lies in CAC software. Healthcare software vendors are beginning to create CAC products to be used by clinicians at the point of care. These products can be divided into separate groups: natural language processing (NLP) and structured input (SI). This paper will focus on studies of SI software created by one vendor in particular.

NLP software generates CPT and ICD billing codes by scanning the text of electronic documents. These documents are usually created with a different software program. Words, phrases, and sentences are analyzed by the software and, based upon a set of underlying rules, codes are generated.

SI software operates quite differently from NLP. SI software both creates the text document and generates the CPT and ICD codes. The user chooses items from menus, and each choice creates a text phrase. By picking multiple items from multiple menus, the user creates the document.

At the end of this process, CPT and ICD codes are generated by a coding engine. This engine analyzes all menu choices that have been made and, based upon a complicated series of algorithms, generates appropriate codes.

The main advantage to this type of CAC system is that the physicians are being prompted for the detail needed to generate appropriate CPT and ICD codes. When a physician dictates a procedure note, they may or may not include necessary detail. As a result, the dictated note may not be as easily coded.

Study Sites

The CAC software in question has been used in a variety of settings, including small ambulatory surgery centers (ASCs), high-volume for-profit hospitals, and complicated academic settings. Currently, there are more than 300 of these types of institutions using the CAC software. In an effort to test the theory that physician documentation and coding actually improved with this software, researchers conducted three studies.

Study 1

First Site: This site is a hospital located in the eastern United States, with a large outpatient facility and a 100-bed hospital facility along with more than 75 research programs and a range of specialty-based clinical programs. The CAC software has been used in this site's endoscopy suite since November 2002. Three site-employed gastrointestinal physicians perform 180 procedures per month in the three procedure rooms of the suite. The CAC software is currently interfaced with this site's homegrown HIM system.

Second Site: This site, located in the South, is one of the largest rural hospital systems in the United States. The organization is composed of small and large acute and subacute care hospitals, rehabilitation facilities, nursing homes, home health agencies, diagnostic testing facilities and wellness centers plus 35 ambulatory medical clinics. This site has an endoscopy center on its main campus where 7 physicians perform 1,600 general gastrointestinal procedures per month in 5 procedure rooms. The CAC software has been used at this site's endoscopy center since November 2002, with several interfaces to other systems.

Study 2

This site is an orthopedic specialty hospital in the southwest United States. About 8,000 orthopedic and pain procedures are performed annually in this hospital. The CAC software has been used at this site since 2004.

Study 3

This site is a level 1 trauma center on the West Coast. The product has been used in gastroenterology for more than five years. This study differed from the previous two studies in that it did not involve analyzing CPT codes. Instead, billing data was analyzed for one year preceding and following the implementation of the software to determine whether or not the CAC software had any impact on revenue.

Methods

In order to study the financial outcome of the product on an organization's documentation and coding of medical procedures, an initial research project approach was developed. After reviewing the approach with the participating organization, the project approach and research methodology were finalized. The approach consisted of five steps:

1. Initial client interviews during which the site's representatives were interviewed to discuss the basic project approach and timing, determine how the software is being used, and confirm specific next steps
2. Data gathering of client information from hospital visits, including compilation of findings into summary worksheets
3. Client interviews with key staff, including clinical, HIM, and financial representatives, to review the site's data and understand the organization's coding/billing workflow
4. Off-site data analysis to independently review and confirm results
5. Final report preparation

For the pre-CAC software sample, 50 records with facility codes and 50 records with professional codes were randomly selected from a group of outpatient records. For the post-CAC software sample, 50 facility and professional records were randomly selected.

Once patients were randomly selected, specific reports and data were gathered at each participating site to capture the details of the procedures that were performed as well as the claims-based information that was generated at the end of each procedure—either through the use of CAC software or using mechanisms prior to implementation of the product. All reports were blinded of patient-identifying information at the study site.

Reports and data elements for each of the pre- and postinstall patients were collected. These included the following:

1. UB92 and HCFA 1500 forms

2. Procedure notes

3. Coding reports generated from CAC software

Data Analysis

Once the required information was collected at the site, it was sent to an independent third party for analysis. Each claim was reviewed for accuracy and reimbursement. The claims were also reviewed in total and compared pre- and post-use of the CAC software. Each of the following data components was analyzed:

1. CPT appropriateness for facility claims

2. CPT appropriateness for professional claims

Findings, Study 1

The results of the study showed that coding accuracy improved by more than 50 percent in claims coded using the CAC software as compared to claims coded without the CAC software.[2] The improvement was calculated by identifying claims pre-implementation that were undercoded or incorrectly coded, then determining the level of improvement made in the accuracy of coding in claims reviewed post-implementation. The system not only improved the coding for services but also helped the facility in meeting the federal government's compliance program. Based on improved coding demonstrated for the types of services reflected on the claims that were reviewed, it was projected that reimbursement would likely increase at least 15 percent in the implemented departments.

This increase is due to improved coding specificity, correction of incorrect codes, and better identification of performed procedures. An organization's actual results will depend on the types of payers and the specific contractual arrangements. A 15 percent improvement in net revenue for areas using the CAC software could translate to an improved profitability of a facility by 1 to 2 percent for overall outpatient performance depending on the organization's payer mix, the payer penetration, the revenue streams of the implemented departments, and the total outpatient impact of the increased revenue for the facility.

Findings, Study 2

The results of the study showed that coding accuracy for the facility improved by 42 percent in claims documented and coded with the CAC software versus claims documented and coded without the system. An improvement of 57 percent was measured for professional claims. The improvement was calculated by identifying claims pre-implementation that were incorrectly coded, then determining the level of improvement made in the correctness of coding in claims reviewed post-implementation.

Findings, Study 3

Billings were compared from 1999 through 2000 and 2000 through 2001. The volume of procedures stayed roughly the same, but gastroenterology fee billings rose by 22 percent, and the average amount billed per procedure increased by 33 percent. Actual reimbursements received rose by 50 percent.[3]

Conclusion

These studies help support the theory that CAC software can improve not only documentation, but also coding and reimbursement. In all three studies, reimbursement increased by implementing CAC software.

Because of studies like these, CAC software has been sold more often using a return on investment model. In many cases, a hospital or ASC can pay for the system within the first 18 months after purchasing it. The implication long-term is that CAC software will become more common at the point of care.

For the HIM community, the influence will be pronounced. The work of HIM coders will change from generating codes to validating previously generated codes. This change should allow coders to spend less time reviewing each record and, thus, they should become more efficient in their work.

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Notes

1. Department of Health and Human Services, Centers for Medicare & Medicaid Services. *Improper Fiscal Year 2003 Medicare Fee-for-Service Payments.* December 9, 2003.

2. MacDonald, Keith, and Bruce Hallowell. "Multispecialty Documentation and Coding Product Improves CPT Coding Accuracy by 50 Percent and Revenue by 15 Percent in Departments Where it is Implemented." Study authored by First Consulting Group.

3. Stollman, Neil, MD, and Kathleen Matthews. "Positive Productivity, Better Billing." *Health Management Technology,* 23, no. 8 (August 2002): 22-26.

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