

Hospital Based Computer Assisted Coding - A New Paradigm

Mark Morsch, MS
Rebecca Kaul, MISM, MBA
Scott Briercheck, MCS
A-Life Hospital, LLC

Introduction

Computer assisted coding (CAC) is growing rapidly in the ambulatory setting, which prompts many administrators, coding managers, and HIM professionals to ask whether CAC can also be successful in their hospital? Looking at the successful deployment of CAC in the ambulatory setting one might expect that CAC should produce immediate benefits when applied to the hospital coding environment. However, the use of CAC for acute care coding is relatively low. In this paper, we address the obstacles to adapting CAC to the hospital coding environment, and we offer solutions for overcoming the current challenges. It is our belief that the challenges can be overcome, and we will discuss some ideas and solutions that will enable better adoption of CAC in the hospital coding space.

In order to proceed, we first define and establish the benefits of CAC technology, as well as discuss the long term trends in healthcare that necessitate the existence of capable CAC systems. After establishing the need for CAC, we explore the differences between hospital and ambulatory coding practices, and discuss recommendations for adapting CAC to the hospital environment.

Background

Computer assisted coding technology automatically generates codes directly from clinical documentation. There are two primary types (AHIMA 2004). (1) Natural language processing (NLP) applications scan and interpret unstructured clinicians' notes using specialized linguistic algorithms, extracting the clinical facts that support the assignment of codes. (2) Structured input applications integrate the coding into the clinical documentation process, producing clinical documents with embedded codes (McNannay 2007). NLP applications typically can work with current clinical documentation practices that produce unstructured text, such as dictation, speech recognition, and transcription.

Stepping back to analyze the larger trends in healthcare, we see four motivations for adopting CAC in the hospital setting:

1. A growing and aging population demands more healthcare services. This is a simple observation but is likely the biggest single driver for healthcare organizations. During the period from 1997 to 2005, annual hospital admissions in the US grew from slightly over 34.7 Million to more than 39.2 Million, representing growth of 13%. More telling is that the national US hospital bill grew from \$462 Billion in 1997 up to \$875 Billion in 2005¹, which represents an 89% increase, with a relatively steady annual growth rate of approximately 11%. Projecting forward to 2013 at the same rates of growth, we would

¹ Agency for Healthcare Research and Quality. Healthcare Cost and Utilization Project, Dec 2007.

anticipate 44.3 million hospital admissions at a cost of approximately \$1.7 Trillion dollars.

2. Fiscal policies place greater scrutiny on medical necessity, resource utilization and operational efficiency. With the introduction of DRGs in the 1980s and APCs earlier this decade, reimbursement levels for hospitals were no longer directly tied to the level of service provided. As these systems have evolved, there is a trend toward greater complexity, such as in the recent introduction of MS-DRGs which uses both CCs and MCCs. Similarly, present on admission (POA) reporting adds another step in the coding process. With even larger fiscal challenges in the years ahead, it is likely that future policy changes will require even more time from HIM staff.
3. Consumer and regulatory pressure force an emphasis on quality monitoring and reporting, adding work to HIM departments. The landmark study from the Institute of Medicine² spotlighted medical errors and their impact on outcomes. To improve quality, new quality reporting requirements have been introduced, and these initiatives have recently crept into fiscal policies with reporting of POA, hospital-acquired conditions (HAC) and the physician quality reporting initiative (PQRI).
4. Shortage of HIM professionals constrains the availability of qualified resources. In a recent AHIMA survey³, 76% of respondents who had open coding positions within the preceding 12 months reported having difficulty or extreme difficulty filling the positions.

Goals

With the backdrop of a changing healthcare landscape, the goal of CAC applications is to become the indispensable tool of the hospital coding workflow. CAC, in few years, should be viewed much the same way that spreadsheet software, like Microsoft[®] Excel, is an essential tool for accountants and desktop publishing software is necessary for professional writers and illustrators.

CAC is described by four major benefits (Morsch 2007):

1. Productivity
2. Accuracy
3. Consistency
4. Transparency

In addition, we add:

5. Compliance

Productivity increases when the average amount of time to code a case decreases. An increase in productivity results from the elimination or speed up of particular manual tasks within the coding process such as document sorting and retrieval, duplicate identification, code lookup and selection, code ordering, or data entry.

² Institute of Medicine Committee on Quality of Health Care in America. To Err is Human, Building a Safer Health System. National Academy Press. Washington, DC 2000.

³ Seichilone, Rita and MacKenzie, Scott. Coders Wanted, Experience Required. Journal of AHIMA September 2006, 77-8.

Accuracy improves when the coding output better matches both official guidelines and payer reporting requirements. An improvement in accuracy can be observed through a decrease in denials, reduction in audit discrepancies, or finding lost charges that were previously under-coded. Increasing accuracy helps assure that an organization captures all of the charges that it is entitled to collect.

Consistency in the coding process ensures that guidelines are applied similarly over time and across multiple coding resources. A high level of consistency instills confidence in the coding results, supporting accurate clinical and financial analysis. This is particularly important when employing coders with differing levels of skills and experience.

Transparency and traceability enhances the manageability of the coding process by providing evidence of the workflow and thought process that went into the coding results. This may include links between the codes assigned and the portions of the patient records that support the codes or an audit trail of all changes made to the coding or demographics.

Compliance supports the manageability and auditability of the coding process, which benefits by “getting it right the first time”, thereby eliminating rework and re-bills, which in turn eliminates additional downstream audits. Improvements in compliance are a direct result of the earlier benefits, being derived from more accurate and consistent coding from staff members in the HIM department. These benefits all serve to reduce the preparation work for audits, while simultaneously improving the audit outcomes.

Analysis of the differences between CAC in ambulatory and hospital settings

CAC has demonstrated success in ambulatory applications, and the majority of CAC solutions are designed for specific medical specialties. This represents a challenge to the introduction of computer assisted coding into the hospital setting, in particular inpatient hospital coding, which covers nearly all medical specialties.

The remainder of the discussion will focus on understanding the key differences between ambulatory outpatient coding and hospital inpatient coding. We will leverage this discussion to drive requirements and recommendations for a successful introduction of CAC to the hospital coding environment. We believe that this approach will lead to a successful adoption of CAC in the hospital inpatient coding environment. Three specific factors for the hospital setting are described here:

1. Complexity of the hospital information workflow

The workflow in a hospital coding operation is substantially more complex, integrating combinations of medical record sources that include a mix of paper and scanned images in conjunction with one or more deployed Electronic Medical Record (EMR) systems. Each EMR system may contain a complete or partial slice of the patient visit record, encapsulating information about admission and discharge events, encounters, orders, meds, labs, PACS/RIS, as well as trauma and other targeted specialty areas.

CAC deployment using NLP requires a critical mass of text-based electronic medical record data (not scanned or hand-written) for each patient visit. The text-based record should include key components of directly codeable information such as patient history, current status, chief complaints, progress of care notes, transcribed results, and discharge summary information.

Other valuable corroborating information includes orders, medications, labs results, and nursing notes, just to name a few examples.

Translating this collection of patient data into a meaningful set of structured information and integrating it into a useful hospital coding workflow for billing is a challenging problem; one that hospital coders currently solve through a combination of manual processes supported by IT tools. The coder is responsible for building the composite case “view” of the patient data through the code assignment. However this process yields no ability to trace the codes back to their original sources in the patient record. An integrated solution includes automation to bring together the disparate electronic data sources and present the composite case “view” to the coder for their use.

The hospital CAC workflow must simplify this workflow process, reliably applying NLP to the electronic documents and merging the coder’s view with the handwritten, scanned documents, so that the complete information regarding the patient’s visit is quickly understood by the coder. The CAC workflow and software must also safeguard patient privacy and data security, incorporating compliance and IT best practices.

2. Scale of the document volume and medical vocabulary

The second significant difference between the ambulatory and hospital coding space is the significantly larger vocabulary, the larger scope of the required ICD-9-CM codes (including ICD-9-CM for procedure coding in hospital inpatient), and the substantially larger volume of documents that exist in the hospital environment. It is true that both ambulatory and hospital cases can involve patients with multiple acute or chronic conditions. However, inpatient services are needed for sicker patients and those requiring major surgical procedures. These situations result in significantly more interesting coding scenarios that require the CAC tool to support an in depth understanding of coding guidelines, disease processes, and therapeutic approaches.

CAC in an ambulatory outpatient case can often be performed against a single clinical note, with supporting patient demographics and history. The ambulatory outpatient coding space typically has a focused medical vocabulary, covering an individual visit or procedure that is measured in minutes or hours. A hospital inpatient visit can last days, weeks, or months. The content of the visit record may contain hundreds or even thousands of documents, often with different formats as determined by the systems’ vendors. In addition the medical vocabulary for the case is large, and will include terminology from a broad cross-section of the ICD coding space. Adding to this is the fact that many key documents, such as discharge summary, are not available in a timely fashion, and may not be available at the time of coding. Finally, the training required for a hospital coder is long and arduous, often taking 12 to 24 months to complete.

3. Challenges in DRG-based billing

The third significant difference is the need for DRG-based coding in the hospital inpatient setting. In the hospital setting, both differential and confirmed diagnoses should be coded, while in the ambulatory outpatient setting, only confirmed diagnoses should be coded. In the ambulatory setting reimbursement is tied to service level, while in the hospital setting DRG and APC reimbursement is not.

Support for the many coding rules mandated by Medicare, multiplied by the sizeable number of ICD diagnostic and procedure codes needed in the hospital space results in a larger set of coding outcomes. Further adding to the situation is the evolution of hospital reimbursement systems, including the advent of POAs, CCs and MCCs, which continue to press on the time available from HIM staff members.

In order to successfully manage their work, the hospital coder requires the use of dedicated encoder software to perform code optimization, abstraction, and grouping, since the sheer volume of the DRG rules and their interactions takes thousands upon thousands of pages to encapsulate. CAC solutions must provide an automated way to incorporate these POA, CC, and MCC flags, and must integrate with the downstream encoder software, so that all of the essential information can be properly collected, abstracted, grouped, and directed into the final billing process.

Coders also need to verify that the payment rules are properly followed. Payer reporting requirements on the ambulatory outpatient side include LCD/NCD and CCI, while reporting requirements for hospital inpatient include POA, CC, and MCCs. Assurance of compliance can only come from audits.

The size and scale of audits in the hospital coding setting is daunting. Audits can originate from many sources, including from within the HIM department, from hospital internal auditors, external auditors, insurance payers, state government auditors, and CMS. The addition of the RAC audits to this burgeoning list adds more work for an already burdened HIM staff.

It is imperative that the hospital CAC system support these many audit requests by providing a structured set of reports that can quickly demonstrate traceability and compliance to an auditor, by showing full attribution for each selected code, back to the original medical record, regardless of whether that record originated from a text-based document or a scanned document image.

Strategies for success

How can CAC be successfully applied in the hospital setting? We identify six strategies that can help guide HIM leadership in planning for, evaluating, and implementing CAC solutions in their hospital coding environment.

1. Find a solution that fits into the HIM workflow. CAC applications must integrate with other clinical and administrative applications as seamlessly as possible. Ideally, CAC should simplify the workflow and reduce the number of systems that a coder must interact with to complete their work. An example of how the CAC tool can simplify the workflow is by maintaining document trails for auditing, so that departmental time spent manually gathering data and re-coding cases can be reduced or eliminated.
2. Fully automate routine activities while assisting more complex activities. To deliver the benefits of productivity, accuracy and consistency, CAC technology should be an intelligent assistant to the coder. Automating simple coding scenarios; identifying , ambiguous or contradictory documentation; suggesting codes based on a thorough review of all documentation; eliminating repetitive data entry; and providing views across both structured and unstructured documentation will elevate the current coder role towards one of auditor or reviewer. Since hospital coding is unlikely to be fully automated, the focus should be on assisting and supporting the coders to work more effectively.
3. Demonstrate benefits for the coder and the administrator. To be accepted, all levels of the HIM organization should realize the benefit and value of CAC. Coders must accept the application and be motivated to implement changes in the coding process. Administrators need evidence that applications will deliver quantifiable benefits and that

these benefits will be measurable and reportable to senior executives. As an example, CAC applications should help speed coder training and productivity, delivering benefit to the coder while providing resource relief for the administrator.

4. Supply data that is meaningful and complete. CAC technology can work without significant changes to the clinician documentation workflow (for NLP) or may be integrated into the clinical documentation process (for structured input) or into a more near-real-time coding process (for concurrent coding). Regardless of the scenario, complete and timely clinical documentation is a prerequisite for accurate coding. CAC technology can not make up for deficient or missing information. Similarly, CAC tools should provide management with strong capability for measuring productivity, auditing results, monitoring performance, and training coders.
5. Plan for resiliency. CAC developers must demonstrate that their solutions can work for a variety of cases and can be maintained as coding guidelines change, while securely managing the data. Adaptability to new coding needs, such as supporting concurrent coding initiatives that improve the quality of the data, is an important attribute. Also, the HIM environment in any organization is not static. Facilities expand or restructure altering the case mix, information systems are upgraded or replaced, clinical documentation changes in format and content, and personnel turnover at all levels. CAC applications must respond gracefully to these dynamics, and HIM departments will require an appropriate level of internal and external support to maintain consistent performance.
6. Build trust. Trust is the essential ingredient to successful CAC. Vendors must deliver solutions that map to the requirements and workflow of the HIM staff, while delivering the promised efficiency, accuracy, and audit value that CAC offers. Coders must be able trust the technology and utilize it as part of their daily work activity. Administrators must be able to trust that both vendors and coders can use this technology to deliver value. All stakeholders must believe that the coding workflow process improvements are possible, since more efficient, quality-focused, and flexible HIM processes will support a sustainable and continuously improving healthcare system.

Conclusion

We have discussed many issues affecting CAC in the hospital setting. Significant changes in hospital billing and auditing processes are increasing the demands on HIM departments, while fiscal discipline and a slow growing talent pool limit the resources that are available.

The goal of CAC is to become the essential tool for hospital coding by meeting both current and future requirements. While the motivations and goals for CAC are clear, there are significant challenges in the hospital setting. CAC developers must demonstrate the effectiveness of their solutions for hospital inpatient and outpatient services while working with HIM professionals to serve up three important deliverables:

1. Incorporate CAC into an integrated workflow process that collects data from disparate source systems and gives the hospital coder a combined view of NLP text and scanned handwritten documents.

2. Efficiently allow the hospital coder to interact with the information to accurately complete the coding. Flow this information downstream into the encoding and abstracting process so that a final bill is efficiently produced.
3. Support the post-coding process with thorough attribution of all selected codes in each case, so that the HIM staff can comply with audit requirements using a pre-existing set of structured reports.

As the state of hospital CAC progresses, HIM professionals should look forward to a revolutionary change in hospital coding workflow over the next few years.

References

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