Computer-assisted Coding Software Standards Workshop
October 2007

Summary

Introduction
The American Health Information Management Association (AHIMA) and its Foundation of Research and Education (FORE) convened the Computer-Assisted Coding Software Standards Workshop in Philadelphia, PA, on October 5–6, 2007. The workshop was sponsored by a grant from 3M Health Information Systems. It was attended by representatives from computer-assisted coding (CAC) software vendors, health information system vendors, HIM educators, HIM professionals, and other end users. In 2004, an e-HIM workgroup developed the CAC acronym and defined the term:

**Computer-assisted coding (CAC)** is the use of computer software that automatically generates a set of medical codes for review/validation and/or use based upon clinical documentation provided by healthcare practitioners.

Purpose
In 2006 the first CAC software standards workshop was held to begin a dialogue between interested CAC stakeholders to promote a future state where automated tools are used to capture discrete coded data that can be mutually understood and shared for multiple uses within the healthcare industry. The intention of this year’s program planning committee was to further promote this state based upon previous accomplishments. During the 2006 gathering the group worked on coding process improvements and performance measures to meet the challenges faced for using software effectively in 2007. AHIMA convened three workgroups to address the creation of a standard coding workflow process model, standard methods for calculating variances, and production targets to reference standards. The conference was convened to explore progress or changes in the environment and begin introducing the work completed in 2007 to be refined and disseminated in 2008.

Keynote
Prior to the keynote address, Susan Belley started the workshop by sharing her experiences as a coding manager for the Cleveland Clinic Foundation. She detailed the challenges a coding manager faces in day-to-day practice. In addition, she shared how code changes and a new inpatient payment system affected her daily operations this year. She set the stage for the importance of striving to meet the challenges and opportunities the industry faces as work on CAC software standards progresses.

Manisha M. Sheth from the US Attorney’s Office, Eastern District of Pennsylvania, delivered the keynote address. Sheth discussed the current state of healthcare fraud and abuse with the focus on fraud. Sheth presented various criminal case studies that involved prosecution for fraudulent activities. She reviewed measures to detect and prevent fraud and discussed how computer-assisted coding fits into the overall picture. Her presentation set the tone for the day by describing how CAC has advanced while noting the work still to be done in regard to CAC technology.
**Presentation of Technical Papers**
The first day of the workshop consisted of presentations based on selected technical papers. The technical papers were solicited via a call for papers open to all interested parties. All of the 10 papers submitted were chosen (some with recommendations) for presentation at the workshop. The papers were selected by the program committee using a system where the author or company information was blinded to the rater. The following is a list of the technical papers. (Visit http://www.ahima.org/perspectives/conference_papers.asp to view the complete archive of papers.) Each presentation lasted approximately 25 minutes, which included the time allotted for questions. The papers were grouped according to the following topics: enabling technologies for process improvement; automation of coding process factors; and environmental issues affecting CAC adoption and use.

**Enabling Technologies for Process Improvement**
- “CDA for Common Document Types: Objectives, Status and Relationship to Computer-assisted Coding” by Liora Alschuler from Alschuler Associates
- “Defining the Standards for Automated E&M Coding through Coding Consistency Methodology” by James Flanagan, MD, PhD, FACP, and Mariana Casella dos Santos, MD, from Language and Computing
- “Use of the Delphi Method to Generate a Gold Standard for the Medical Coding Industry” by M. Elliott Familant, PhD, Stuart Covit, and Andrew B. Covit, MD, from Artificial Medical Intelligence

**Automation of Coding Process Factors**
- “Evaluating E&M Coding Accuracy of GoCode as Compared to Internal Medicine Physicians and Auditors” by Rhonda R. Thomas, PhD, MBA, Constantin Mitocaru, and Judith Hanlon from LingoLogix
- “Computer-assisted Coding at Its Limits: An Analysis of More Complex Coding Scenarios” by Mark Morsch, MS, Carol Stoyla, CLA, Michael Landis, Stacy Rogers, Ronald Sheffer, Jr., MA, Michelle Vernon, RCC, and Michelle A. Jimmink, MBA, from A-Life Medical and A-Life Hospital
- “Evaluation and Management Documentation and Coding Technology Adoption” by Susan Fenton, PhD, MBA, RHIA, from AHIMA, and Larry D. Gamm, PhD, from Texas A&M’s Health Science Center’s School of Rural and Public Health

**Environmental Issues Affecting CAC Adoption and Use**
- “Coding Professionals’ Feelings toward Computers and Automated Coding” by Mary H. Stanfill, RHIA, CCS, CCS-P, from AHIMA
- “Communication of Clinically Relevant Information in Electronic Health Records: A Comparison between Structured Data and Unrestricted Physician Language” by Philip Resnik, PhD, Michael Niv, PhD, Michael Nossal, Andrew Kapit, and Richard Toren from CodeRyte
AHIMA Coding Workflow Process Model Poster
Jean Bishop presented the AHIMA Coding Workflow Process Model to the attendees. This model was developed using the input of the 180 members of the online CAC Community of Practice by building consensus of the steps in the coding process. The model was displayed as a poster. A copy is located at http://cop.ahima.org/COP/ComputerAssistedCodingStandards/Resources/Attachmentfusion?AttachmentID=24199. (Please note that you must be a member of the Computer Assisted Coding Standards Community of Practice to view this document.)

The model is the first attempt at standardizing the steps in the coding process. This standardization will allow for analysis in order to improve the process through various methods, such as automating and/or reengineering the work process.

Breakout Group Summary
The second day of the workshop was designed for the participants to engage in group discussions regarding specific topics. The topics outlined by the program planning committee were based upon the 2006 CAC software standards workshop information. The sessions were designed to encourage open dialogue between the facilitator and the participants to further facilitate identification of computer-assisted coding opportunities.

The four sessions were as follows:
- Coding Quality Assurance Methods
- Measurements of Documentation Quality and Code Assignment from a Clinician’s Perspective
- Prioritization of Specific Coding Guidelines That Might Enable Progress toward Greater Consistency and Ease of Automation
- Exploring the Impact of Technology on the Coding Process

1. Coding Quality Assurance Methods. The purpose of this group was to focus on performance and quality measures from other disciplines, identifying ideas that could be useful in coding evaluation and translating them to health information management and code assignment.

The discussion focused on different definitions of the terms based upon reference points. For example, the meaning of the term consistency in the context of computer-assisted coding differs from its meaning from a data quality focus. The group recommended establishing a consensus for the meaning of several terms, such as precision, accuracy, validity, and reliability.

The group also discussed data representation, with clinical coding and billing being pieces of this representation. Other terminologies such as SNOMED are also pieces of data representation. This discussion also touched on knowing which “standard” to use to represent data.

The conclusions of the participants in this session were as follows:
• Terminology regarding data extraction needs to be concrete.
• The group recommended creating an e-HIM workgroup to come to a consensus on definitions.

2. **Measurements of Documentation Quality and Code Assignment from a Clinician’s Perspective.** The purpose of this group was to facilitate dialogue between physicians and coders about how to measure the quality of documentation and its impact on code assignment.

Barriers identified by the participants in this session were as follows:

• Feedback regarding the quality of documentation is not at the point of care, where the documentation occurs. It usually occurs later as a back-end process.
• The interested individuals are not always involved in the template design process.
• Differences in inpatient and outpatient coding guidelines in addition to payer requirements make it difficult for documentation to meet all the various requirements.

The group discussed potential ways to address the barriers. Buy-in from key stakeholders, such as physicians, administrators, and coding professionals, is important to make the desired behavioral changes in regard to documentation and changes to documentation templates. This buy-in from key stakeholders will validate the design and functionality of electronic health record concepts. Many times the differences between coding terminology and physician terminology create opportunities for documentation feedback. If the two terminologies were incorporated in documentation design, this could reduce the need for feedback. If feedback regarding documentation is not at the point of care, it is usually important to aggregate the feedback to the provider. The participants also identified the differences in coding terminology and physician terminology as being a starting point to try to overcome barriers.

3. **Prioritization of Specific Coding Guidelines That Might Enable Progress toward Greater Consistency and Ease of Automation.** The purpose of this group was to identify which areas of coding present the greatest problems in terms of unclear guidelines, suggest which areas offer a practical opportunity for the largest and most rapid gains, and suggest processes for improving consistency in those areas within individual organizations and in the coding community at large.

The participants in this session identified multiple areas of coding in which unclear guidelines can cause inconsistencies in code assignment:

• Evaluation and management (E&M)
• Postoperative complications and conditions
  • What conditions are considered normal postoperative conditions even if they are treated?
- Chronic and coexisting conditions
  - Emergency department and other outpatient settings
  - Stored list of chronic conditions in an electronic drop-down menu or problem list
- Combination codes
  - Hypertension and heart disease, diabetes
- Interventional radiology
- The official documenter and the attending physician for coding purposes
  - Nurses’, physical therapists’, and/or nutritionists’ detailed documentation about specific conditions
- Coding guidelines that do not follow physician workflow
- Detail of documentation
  - Human read versus computer read
  - Coding terminology versus physician terminology—what is clinically relevant could be different
  - Documentation training for coding purposes in medical school if training currently provided is limited
- Different guidelines based upon setting in which services were provided and payer rules and regulations
  - Guidelines do not keep up with how medicine is practiced.
  - Inpatient versus outpatient guidelines differ.
  - In the outpatient setting, what can be coded for pathology cannot be coded for lab.
  - State guidelines vary in regards to V codes and E codes to report.
- Time frame for previous documentation
  - Electronic records could change the “record” as it could be birth to death, not just a episode of care.
  - A surgery patient obtains preoperative clearance from a cardiologist prior to surgery. The cardiologist’s documentation is detailed in regard to specific heart conditions; however, the surgeon’s documentation the day of the procedure does not contain the same specificity in regard to the heart condition as the cardiologist’s.

The group explored various ideas to resolve the issues identified above. In regard to E&M coding, the guidelines contain much subjectivity. If the elements were defined, and not just examples provided, the subjectivity in this area would be reduced. The ultimate goal would be to have the E&M code be reproducible and have an increased inter-rater reliability. One way to address this could be to gather supplemental work from different settings to create an ultimate, easily computable E&M system for others to react to. An option that was discussed for interventional radiology is bundling the various codes required for the service, such as the catheter placement, the actual intervention, and the supervision and interpretation. The discussion of one set of guidelines regardless of the setting of service was identified as an important issue. Another area of discussion was the need to provide documentation training that is relevant to current coding.
guidelines to medical students and residents as a way to improve documentation and increase coding consistency.

4. **Exploring the Impact of Technology on the Coding Process.** The purpose of this group was to focus on how CAC technology can help the clinician tell the clinical story concisely and how technology can help coding professionals be more accurate, consistent, and productive.

The participants discussed the uses of technology in the coding process. They believe technology can be used to audit coded data in addition to advising or suggesting codes at the point of care. The participants identified that it is important to have a feedback loop to ensure proper code assignment. Technology could be beneficial in both professional and institutional settings. Technology may be in the form of structured input, natural language processing, reminders to providers, and notification of deficiencies in documentation. Regardless of the technology, planning for its use is vital to the success of the system. In regard to software regulation, the consensus was that software should not be regulated but should contain standards, coding guidelines, and authentication/certification functionalities. Technology should be able to demonstrate reliability and accuracy—the human and computer should measure at the same level. The participants identified obstacles to technology: human resistance, organizational change, process measures, and definition of the information technology infrastructure.

The recommendations of the participants in this session were as follows:

- Use CDA4CDT (clinical document architecture for common document types) to move toward CAC. Enable physicians to communicate richness of the narrative, and identify incentives for physicians to use CDA4CDT.
- Perform a periodic survey of information technology of hospitals and physicians.
- Disseminate and educate about the coding workflow process model.
- Promulgate the coding benchmark survey and productivity measures.
- Offer CAC education for coding professionals at 2008 AHIMA convention.
- Promote documentation improvement processes through tools, technology, and working with physicians.

**Review of Workgroups and Next Steps**

The workgroups reviewed their discussions and output, as listed above, on Sunday morning for feedback among the larger audience. The next steps gleaned from the workgroups are listed below.

**Short-Term Next Steps**

- Disseminate the AHIMA Coding Workflow Process Model to coding professionals for comment and feedback via established methods such as coding roundtables and *Journal of AHIMA* articles.
• Reach out to a larger audience in regard to CAC standards work (AHIMA is planning this as a track of the annual Coding Community Meeting).

Long-Term Next Steps
• Investigate one set of coding guidelines to facilitate consistency of coded data across the healthcare continuum.
• Seek funding for an environmental scan to identify the information technology infrastructure in order to identify the impact of technology on the coding process.
• Convene a workgroup to define terminology such as precision, accuracy, validity, reliability, and consistency.

Conclusion
Technology continues to change the way key HIM functions are performed. As computer-assisted coding continues to mature, AHIMA is committed to championing the challenges within the coding process in order to improve the overall process. Consistent, quality data can be gained in the industry by working to resolve the challenges in the coding process. The 2008 workshop will again convene in conjunction with the 80th AHIMA Convention and Exhibit as a dedicated track in the two-day Coding Community Meeting October 11 and 12. The focus this year will be about using standards to improve the coding process and better prepare the workflow to take advantage of emerging technologies in natural language processing and data quality improvement.
Reference

Appendix A

Computer-Assisted Coding Software Standards Workshop Program Planning Committee

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