Aligning Competing Initiatives for Coded Clinical Data

Cheryl Ericson, MS, RN, CCDS, CDIP
Director of CDI
ezDI

Objectives

• At the completion of this session attendees will be able to
  – Discuss the basics of computer assisted coding (CAC)
  – Compare and contrast some of the key features associated with current CAC technologies
  – Explain the benefits of CA

Reality Check

• How has the implementation of an electronic medical record (EMR/EHR) affected health information management (HIM) processes?
  – What impact has it had on provider documentation?
    • Has it improved?
  – What impact has it had on coding?
    • Has it been simplified?
Healthcare Data

• An EMR should be more than a “data dump” of data from different sources into a common location, but this is often the result of automating paper processes
  – Most organizations have multiple systems that may be unique to each medical specialty so clinical definitions may vary across systems i.e., First Data, SNOMED, ICD-10-CM/PCS, HCCs, etc., leading to a confusing clinical story or leaving gaps when all the elements are combined into one record

The Demands of Coding

• The importance of coded data continues to grow as it is used not only for reimbursement, but also to represent the quality of healthcare provided
• Coders are being asked to accurately abstract and code more complex health information from increasingly cumbersome health records using a less familiar code set (ICD-10-CM/PCS) that was predicted to negatively impact coder productivity

The Demands of Coding

• According to a recent AHIMA practice brief on Coding Workflow and CAC, the current demands of an evolving healthcare climate requires coders to have a robust clinical understanding and code with greater accuracy and speed than ever before
• These factors create a stronger impetus to improve coding and documentation processes
Computer Assisted Coding (CAC)

- The main function of CAC is to use a natural language processing (NLP) engine to identify key terminology to automatically produce or “suggest” ICD-10-CM/PCS or CPT codes, depending on the setting, directly from clinical documents helping organizations manage the complexity of coding and billing
  
  - Productivity is expected to increase 15% - 20% after the implementation of CAC tools

According to the AHIMA Automated Coding Workflow and CAC Practice Guidance (2013 update) CAC technology

- Enhances the coding process
- Will not replace coding professionals
- It provides technological assistance in the uniform assignment of valid codes and descriptions

The role of coding changes with CAC where coders “validate” the suggested codes

- Minimize coding errors
- Reduce rising healthcare expenditures especially those associated with administrative costs

Managing high volumes of codes requires healthcare providers and payers to use complex coding systems, which drives the demand for technologically advanced CAC systems
Healthcare Data

- Healthcare data can be structured or unstructured
  - **Structured** data describes data fields that are populated with information that fits the associated parameters of the field i.e., date of birth, account number, etc.
  - **Unstructured** data is the narrative within the health record e.g., provider notes

The proliferation of the EMR (electronic medical record) has attempted to convert unstructured data into structured data at the point of physician entry
- Drop down boxes with controlled vocabulary
- Choice lists with controlled vocabulary
- Etc.

When combined with code suggestions this type of technology is an example of **standalone computer assisted coding (CAC) with structured input**

Computer Assisted Coding

- **Structured input applications** integrate the coding into the clinical documentation process, producing clinical documents with embedded codes
  - Unfortunately, this process doesn’t typically impact the quality of clinical documentation so additional review by clinical documentation improvement (CDI) or coding may still be necessary
Healthcare Data

- Organizations have experienced limited success with “front-end” or point of provider documentation solutions
- Clinical documentation improvement (CDI) efforts, coding and data abstraction for the reporting of quality data continue to be leveraged as manual solutions to address many of the issues associated with unstructured data

Computer Assisted Coding

- A more common type of CAC is a standalone solutions that includes natural language processing (NLP) software
  - NLP applications scan and interpret unstructured clinicians notes using specialized linguistic algorithms to extract the clinical facts that support the assignment of codes
  - NLP applications work with clinical documentation practices which include unstructured text such as dictation, speech recognition, and transcription

Natural Language Processing

- NLP allows computers to read, understand and extract in-context information from free text i.e., transcribed provider notes or EMR provider notes
- NLP allows organizations to quickly normalize and extract healthcare data turning it into interoperable, actionable information that helps patients and providers
- Therefore, CAC creates a direct link between the clinical documentation and code assignment leaving a verifiable audit trail
Suggested Code w/Evidence

X21.9 Gastro-esophageal reflux disease without esophagitis

GERD (2)

Evidences Remove All

PAST MEDICAL HISTORY
...on CPAP, GERD, Crohn’s dise...

J47.2 PAST MEDICAL HISTORY
8. GERD (gastrointestinal reflux...

Natural Language Processing

• There are different approaches to NLP so AHIMA recommends identifying the vendor’s approach when evaluating the technology in order to better understand how the system generates the list of codes for comparison

• The more accurate the codes produced by the CAC system, the more quickly a coder can review the results, and overall results between coders will be more consistent
  — Precision and Recall are used to measure CAC

Precision

• CAC performance is typically measured in terms of precision and recall
  — Precision measures the number of accurate results compared with total results i.e., how well the suggested codes “match” those that a coder would identify or is the software suggesting too many codes
    • Higher rates of precision mean fewer false-positives
    • Typically discrepancies are found when it comes to the reporting of symptom codes and those which can be considered integral to another condition since there is variability among human coders as well
Recall

- Recall measures the number of accurate results compared with the potential number of accurate results i.e., does the CAC identify the same codes as identified by the coder or does it “miss” codes that should be suggested?
  - Higher rates of recall mean fewer false-negatives

Natural Language Processing

- Specifically, NLP technologies differ in their
  - Capability to breakdown narrative text
  - Ability to recognize coding-related facts
  - Ability to integrate facts found in different sections of a document or between different documents
  - And the ability apply applicable coding guidelines or other rules

Natural Language Processing

- The more accurate the codes produced by the CAC system, the more quickly a coder can review the results, and overall results between coders will be more consistent

- Typically CAC/NLP requires “training”
  - Ask what is the accuracy rate “out of the box” for each setting or type of coding
  - Ask how quickly the accuracy rate is expected to improve i.e., weeks, months or years??
  - Ask what is the maximum achievable accuracy
Be Weary of Legacy Systems

• Early NLP engines worked well with the training sets used to “train” or create the technology, but those engines were never designed as scalable solutions, which is why NLP has been difficult to adopt
• The first technologies were not architected to handle hundreds or thousands of physicians from different specialties, all with different speech patterns, abbreviations, misspellings and the multitude of different document types
  – They were successful within a domain i.e., radiology, but not across all fields

Computer Assisted Coding (CAC)

• Historically, CAC described the use of computer software that automatically generates a set of medical codes for review, validation, and use based upon provider clinical documentation
• The role of CAC has expanded through recent technological advances
  – If your current solution isn’t meeting expectations, it may be time to view alternative offerings
  – If you viewed CAC in the past and was unimpressed, it may be time to take another look

Evolution of CAC
NLP Technologies

- There are five different approaches to NLP. The most basic resulting in the lowest precision and recall rates due to a lack of “intelligence” or ability to apply coding guidelines:
  - **Medical dictionary matching** highlights medical terminology within the documentation.
  - **Pattern matching** coordinates medical terminology with specific patterns of text that describe a diagnosis or procedure.

NLP Technologies

- The more advanced types of technology include:
  - **Statistical** which uses a large sample to identify algorithms based on word and pattern distribution.
  - **Symbolic** or linguistics where the elements of language are identified.

Successful CAC Implementation

- In order to be successful, a NLP engine must be able to identify every piece of data from every document type.
  - Basically, a NLP engine alone is not enough.
- According to an industry leader, “Though we’re experiencing accelerated innovation, some NLP “solutions” tend to be partial ones. If you have just an NLP engine, chances are you won’t succeed. You need more than an engine, just as a car does to run properly. It’s the same with an effective NLP solution.”
Example of Complex Reasoning

RESULTS:
The patient underwent a full Bruce stress test with Cardiolite injection using standard protocol. At rest, heart rate was 64 and blood pressure was 140/84. The patient exercised 10 minutes 30 seconds achieving a heart rate of 146 and blood pressure of 162/84. The patient had leg fatigue. There was no chest pain, EKG at baseline revealed normal sinus rhythm with inferolateral T-wave inversions. There were no changes with stress.

Spectrographic evaluation failed to reveal any clear evidence of infarct or ischemia. There is a degree of breast attenuation at the apex at rest and stress. Gated SPECT imaging revealed a borderline normal LV ejection fraction with a resting ejection fraction of 53% without focal wall motion abnormality.

Processing Unstructured Data

Key Considerations with CAC

• Review and understand your current coding workflow and how it interacts with all aspects of the revenue cycle
  – What data is abstracted and why?
    • Is coding fixing registration issues?
    • Is there another department who has more accurate information? Just because coding has always "done it" should they continue to do so?
  – Discharge disposition and discharge location
Key Considerations with CAC

• What data is reported into the billing system in addition to diagnosis and procedure codes and why?
  – Are all the fields in the billing system required under current payment requirements i.e., “complications”?
• Do coding requirements cross settings?
  – Are inpatient coders also reporting ED levels?
  – Are MS-DRGs also reported for outpatient facility cases?
  – Are facility coders also reporting E/M codes?


Key Considerations with CAC

• Because coding professionals use a variety of computerized and hard-copy coding references and support tools it is important to understand how CAC affects these tools and their use
  – How will the coder interact with encoder software?
  – When will the encoder be initiated?
  – Are reference tools integrated to match code suggestions?
• The brief states it is most beneficial when CAC software has encoder functionality embedded


Key Considerations with CAC

• In addition to workflow, it is also important to determine how many interfaces will be required to support the data flow between the health record, the CAC solution, and billing tools
• The minimum required interfaces include:
  – Admit, Discharge, Transfer (ADT) feed i.e., registration
  – Electronic Health Record (EHR)
  – Financial systems (BAR)

Key Considerations with CAC

- Although most organizations have some form of an electronic health record to comply with Meaningful Use, not all documents are in an ideal format when using CAC
  - Scanned documents are often an issue for CAC solutions so ask about the availability of optical character recognition software (OCR) to avoid manual review of these documents
  - Templated document can also be problematic as the underlying text i.e., basis of the form, may be missed

AHIMA Toolkit Sample Questions

- AHIMA has a CAC toolkit that provides questions that can help an organization determine the best CAC solution for their needs beyond pricing key questions include:
  - Describe how the NLP engine that powers the CAC learns, grows, and improves code assignment accuracy over time.
  - How does it model concepts and relationships, and what is the size and strength of its ontology?

AHIMA Toolkit Sample Questions

- Does the system contain all interfaces needed to provide the coder with a single workspace view and access to clinical documents that are needed for the encoder, CAC, and clinical documentation improvement (CDI)?
- Does the system enable simultaneous coding and grouping or grouping interfaced? What about auto shuffle capabilities?
AHIMA Toolkit Sample Questions

• Can the system workflow be configured to eliminate toggling among various screens/systems in order to access documentation necessary to validate demographics and to perform encoder, CAC, and CDI activities and processes? Please describe.

AHIMA Toolkit Sample Questions

• Does the system provide anywhere, anytime access to complete ICD-9 and ICD-10 coding guidelines and coding clinic references based on selected code set?

• Describe the CAC (NLP engine) software’s ability to generate HCPCS and CPT codes, provide coding edits for medical necessity (local coverage determinations and national coverage determinations), and integrate with the charge description master.

Investing in CAC

• Technology can automate many manual tasks associated with coding and CDI i.e., identifying and prioritizing records for review

• Technology can increase coding and CDI efficiency when configured to support best practice workflow i.e., updated records, high dollar records, query opportunities, etc.
Investing in CAC

• Keep in mind if it sounds too good to be true, it may be too good to be true
• All CAC technology does not have the same capabilities or accuracy
  – Be sure the solution leverages the most advanced and modern technological strategies
    • Cloud based computing
    • Linguistics
    • Machine learning

Thank You

Questions???