

Aligning Computer-Assisted Coding and Information Governance Efforts

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AHIMA defines information governance as “the enterprise-wide framework for managing information throughout its lifecycle and supporting the organization’s strategy, operations, regulatory, legal, risk and environmental requirements.”¹ AHIMA recognizes that successful healthcare organizations leverage information as a valuable asset that must be carefully and thoughtfully managed throughout the information lifecycle, and thus AHIMA has developed the Information Governance Principles for Healthcare (IGPHC)™. The principles include accountability, transparency, integrity, protection, compliance, availability, retention, and disposition of health information.²

Therefore, the purpose of information governance is two-fold:

- Stewardship of information that supports compliance and risk management
- Leveraging information to achieve organization goals

Information can take on many forms, including unstructured data such as clinical notes, e-mail, and social media, or structured data such as laboratory findings, vitals, and medications. Adopting an information governance framework can help maximize the use of this information to mitigate risks, increase efficiencies, and allow organizations to achieve a competitive advantage. Contiguous with an information governance framework, the “triple aim” of healthcare reform is meant to achieve the same goals, including improving the patient experience of care, the health of populations, and reducing the cost of healthcare.³

For an information governance framework to be successful, organizations must adopt the appropriate support components, structures, and infrastructure, including the technology architecture, standards, taxonomies, metadata, formats, and protocols. Computer-assisted coding (CAC), when appropriately executed, offers an excellent demonstration of the potential of information governance to assist organizations in their strategies to mitigate risks and increase efficiencies.

Defining CAC and the Relation to IG

CAC is defined as the “use of computer software that automatically generates a set of medical codes for review, validation, and use based upon clinical documentation provided by healthcare practitioners,” according to an article in the *Journal of AHIMA*.⁴ CAC includes a variety of computer-based approaches that do not require human interaction to transform narrative text in clinical records into structured text, which may include assignment of codes from standard terminologies such as ICD-9-CM, ICD-10-CM/PCS, CPT/HCPCS, and SNOMED CT. For CAC to work properly, the CAC engine must be tuned to “read” documents and assign codes from pre-existing coded documentation. A variety of healthcare organizations that have successfully implemented CAC applications have reported improved coding productivity, decreased documentation deficiencies, reduced accounts receivable, improved code selection accuracy, and experienced an easier transition to ICD-10-CM/PCS.⁵ However, the success of CAC must be considered in context with the preparedness of the healthcare organization. A good understanding of the tasks for which CAC will be used are needed before CAC can meet performance standards adequate for use in complex clinical coding processes.⁶

The remainder of this article will examine a process for effectively adopting CAC from the perspective of the information governance principles for healthcare and how data analytics is imperative for each step of the process.

CAC Implementation: The Steps for Success

To successfully implement CAC, a process needs to be adopted that takes into consideration the IGPHC framework and its principles. The efficacy of one’s CAC relies on data and information integrity, and that integrity is built by leveraging the

people, processes, and technology within an organization to ensure the system is properly constructed.

The first step in the CAC implementation process is document mapping. This step involves the process of identifying all known document types currently used within the particular organization's health information system/electronic health record. These documents include H&P notes, operation and consultation reports, and progress notes, among others. During this phase, the specific document types to be allowed into the CAC engine are predetermined. The appropriate electronic format of the documents need to also be defined (i.e., TXT, RTF, PDF, etc.). This entire list of documents and their format generate a master mapping document. In summary, a CAC document type is a pre-defined list that will match up the client's document types to the acceptable CAC document types that are allowed into a CAC engine.

The second step in the CAC implementation process is data collection. This step in the process largely revolves around receiving customer data from the documents that are mapped prior to using CAC. This is a critical step in maximizing the performance of the CAC engine. This data is used to "tune" the engine, resulting in an optimized performance of CAC on the customer's code scope. Without this data, the engine cannot be tuned to the customer's specific code usage and may result in suboptimal CAC performance.

Once the organization's documents are mapped and the data from these documents has been used to tune the CAC engine, the next step is to construct a document view interface for coders to annotate, bookmark, and search the documents. This step is critical for the future annotation phase. Reviewing, comparing, and validating the incoming CAC documents to the organization's current documents in their health information system/electronic health record ensures the CAC engine is capturing all of their document types.

It is important in the data collection phase to capture and analyze data and report the findings to the project team. Any and all issues should be managed via an "issues list." In addition to analyzing document coverage between systems, it is also important to conduct user acceptance testing and end user testing. This testing allows end users to validate that the documents and the format derived from the CAC are correct. It also provides an opportunity for the organization to determine if there are gaps in the documents that are mapped to CAC, as well as if there are unnecessary documents that can be removed.

Generally, this step of the process works to validate what is noted in the master mapping document, as well as identifies all codes needed to represent the documents on the master mapping document. Without diligence in this validation phase, the success rate of CAC could be negatively impacted at go-live.

After the documents have been validated and the codes identified, the next step in the CAC process is the annotation phase. The annotation phase literally involves coders highlighting and bookmarking words within specific documents that are linked to specific codes. The process of associating words and phrases within specific documents allows CAC to predict codes based upon natural language, and thus the more accurate, specific, and consistent the annotations are within the training set used for the annotation, the more accurate the predicted codes will be in the future.

CAC requires a very high level of data integrity. This is due to the inherent nature of natural language processing engines. These engines utilize a lexicon to determine if documentation meets criteria to be assigned a final code. If the CAC engine cannot understand a term, concepts are not completely documented, or terms are spelled incorrectly, then the engine may not recognize the term and assign a code accordingly. Clinical documentation improvement (CDI) teams should be involved in the CAC implementation process to assess documentation quality and data integrity.

Finally, the last phase of the project is the go-live of CAC within the organization. In this phase CAC is used to identify codes based upon the linkages between words and codes defined in the annotation phase. At this step, it is critical to continually monitor and evaluate the performance of CAC within the organization to ensure a successful adoption of the technology.

Figure 1. Examples of CAC Reporting

Examples of reporting that CAC should or could generate include the following:

- Individual coder productivity
- Department productivity statistics
- CAC acceptance rates per coder

- CAC acceptance rates per department
- CAC coder and department acceptance rate and trending by diagnosis code
- CAC coder and department acceptance rate and trending by inpatient procedure code
 - Financial impact (MS-DRG and/or hierarchical condition categories (HCC))
 - Severity of Illness (SOI)/Risk of Mortality (ROM) impact
 - Present on Admission (POA) additions/revisions
- CAC coder and department acceptance rate and trending by outpatient diagnosis code
 - Financial impact
- CAC coder and department acceptance rate and trending by outpatient CPT code (and modifier)
 - Financial impact
- CAC coder rejection rates—per coder
 - Diagnosis/procedure, CPT and modifier
 - Financial impact—compliance/risk avoidance
- CAC coder rejection rates—per department
 - Diagnosis/procedure, CPT and modifier
 - Financial impact—compliance risk avoidance
- New CAC charges captured: trending and volumes by charge type
 - Additional revenue (financial impact) identified
- Deleted CAC charges: trending and volumes by charge type
 - Additional revenue (financial) impacted
- DNFC (Discharge Not Final Coded) report by days and dollars
 - Daily reporting and trending reports—programming to the target/goal
- Physician query reporting
 - Volume and type (diagnosis and procedure) of query
 - Provider query volumes
 - Response rates
 - Query impact
 - Volume of queries by staff member (i.e., CDI specialist or coding professional)
- Clinical documentation improvement reports (if the organization's CAC implementation employs concurrent technology)

Source: AHIMA. "[Computer Assisted Coding Toolkit](#)." 2014.

Analytics and CAC are IG Projects

Organizations seeking to gain the maximum value from CAC implementation should be utilizing analytics to measure and determine the effectiveness of the project, and analytics should be adopted throughout the lifecycle of CAC implementation. Figure 1 above provides numerous metrics to analyze CAC. The use of analytics should be performed under an information governance framework. This means key metrics should have properly developed definitions which are detailed enough to

allow all stakeholders throughout the organization to understand how the measure is constructed and when the measure is appropriate to use. A data dictionary that defines in detail the source of data, inclusion criteria, exclusion criteria, date ranges, and any other caveats should accompany any information governance initiative. It is critically important that all stakeholders throughout an organization utilize the same metrics to measure themselves against one another.

One example of how analytics have the potential to quantify the effectiveness of CAC is the use of the precision rate metric. This metric is constructed with the number of suggested and accepted codes as the numerator and the number of suggested codes as the denominator. This allows the organization to determine whether CAC software is suggesting correct codes.

Another metric to use is called the recall rate. This is constructed with the number of suggested codes as the numerator and the number of all final codes as the denominator. This denominator includes codes that were added to the final list without CAC. This metric determines if the CAC engine is classifying clinical documentation appropriately and may also indicate if there may be an issue with data integrity within the clinical documentation.

Other important metrics to assess the effectiveness of CAC are the percentage of change in charts coded per hour. This should be measured before and after CAC implementation. The discharge not final billed (DNFB) metric should also be monitored before and after implementation, as this number should decrease if coding delays are the bottleneck to completion.⁷ However, other non-coder issues causing DNFB delays will not allow this metric to manifest in a lower rate due to the implementation of CAC.

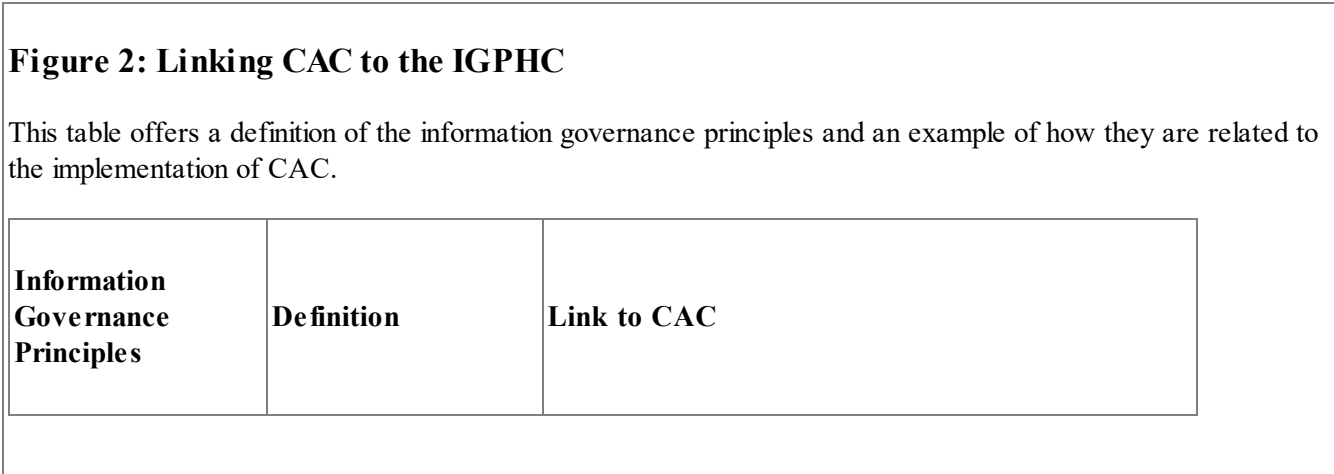
The rate of missed charges is also a metric that should be evaluated with CAC implementation. This metric has the potential to improve dramatically, since coders reading through copied and pasted text with just modest updates can leave key documentation overlooked. On the other hand, the CAC engine will always pick up terms based on its lexicon and will not be subject to the human error involved with reading repetitive documentation.⁸

Another method to determine the effectiveness of CAC is by adopting a process where the clinical documentation team implements CAC before the coding teams. This will allow the CDI team to code charts concurrently and place a working DRG onto the account utilizing CAC. The rate of this working DRG matching the final coded DRG can be used as a proxy to determine how accurately a chart can be coded with CAC as compared to an expert coder.

Many coders are hesitant about a move to CAC due to the drastic changes that it imposes on current coding techniques. Testing the accuracy of CAC with a working DRG vs. an expert coder’s final DRG will allow organizations and coders to feel assured the CAC engine is accurately suggesting codes. This will allow the coders to more confidently change their coding techniques to meet the requirements of CAC workflows, allowing for improved coding efficiency.

One last suggestion for utilizing analytics to measure the effectiveness of computer-assisted coding consists of freeing information from CAC encoders. Many CAC vendor products use a web application deployed in a cloud platform to allow CAC users to access the software and run reports and metrics. While this data source is often overlooked by organizations, on the contrary, the data should be included in an organization’s enterprise data warehouse.

This is because custom reports and dashboards could be created by analytic and business intelligence teams within an organization, allowing for a closer analysis of CAC and its effectiveness.



Accountability	A senior leader shall oversee program compliance.	Appointed leadership should oversee the CAC implementation process, identify the stakeholders, and manage the evaluation process.
Transparency	Documentation should be comprehensive and openly available.	Leadership should maintain transparency through documenting the process, metrics, results, and including users in training and testing.
Integrity	Information that is generated is authentic and reliable.	Leadership needs to consider CDI efforts for maintaining data integrity.
Protection	When appropriate, the information is private, confidential, secret, and classified.	All documents should be encrypted while in transmission to the vendor's CAC platform. Passwords should meet a minimum qualification with capitalization, numbers, and special characters. If possible the platform should allow for two step authentication for increased security.
Compliance	Comply with applicable laws, regulations, standards, and organizational policies.	Expert coder rules built into CAC should follow the organization's compliance policy. Custom rule setting in the application should also be utilized to allow for tailoring of coding rules on a per implementation basis.
Availability	Maintain information in a timely, accurate, and efficient manner.	Organizations should ensure documentation is ready and available to the CAC encoder as soon as possible. Delays in documentation by providers equals delays in final coding.
Retention	Information should be retained for an appropriate time.	Final codes generated by CAC should be appended to the patient's chart in the EHR. Any documentation modification by providers should occur in the EHR, and the updated document should flow into the CAC encoder. This ensures a complete legal health record.
Disposition	The disposition of information should be secure and abide by laws and policies.	The disposition of CAC-related information should follow the same policies that govern health information within the organization.

Promoting Success, Avoiding Failure in IG and CAC

Like any technology project, success is much more dependent upon the people and processes than the technology. CAC is not different in this regard. The IGPHC framework can be used to build a successful program with the right people through constant surveillance of performance.

By incorporating analytics, the progress of the CAC process is continuously tracked to meet organizational goals and objectives and provide instantaneous feedback to stakeholders. While educating all stakeholders on the expectations for CAC is critical to the success of the project, monitoring progress and reporting the measures is equally important for both organizational learning and CAC tuning. Metrics will obviously fluctuate as the project proceeds, but a few questions organizations should be asking to ensure their CAC project is IG-focused include:

- Is the CAC engine tuned and done learning? This is an iterative process that continues beyond go-live and the first productive use of CAC. Metrics will be less than expected until the engine is fully tuned.
- Are all documents being processed through CAC that contain needed documentation for coding? A migration strategy for achieving the highest percentage possible is a critical success factor.
- Have the coders been trained on the latest/greatest features and functions of CAC? Ongoing training will be required as new releases and updates are applied.
- Is there a consistent “best practices” workflow that all coders follow? Watch for inconsistencies in productivity. Observe and validate best practices workflow regularly.

Acknowledgement

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Notes

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