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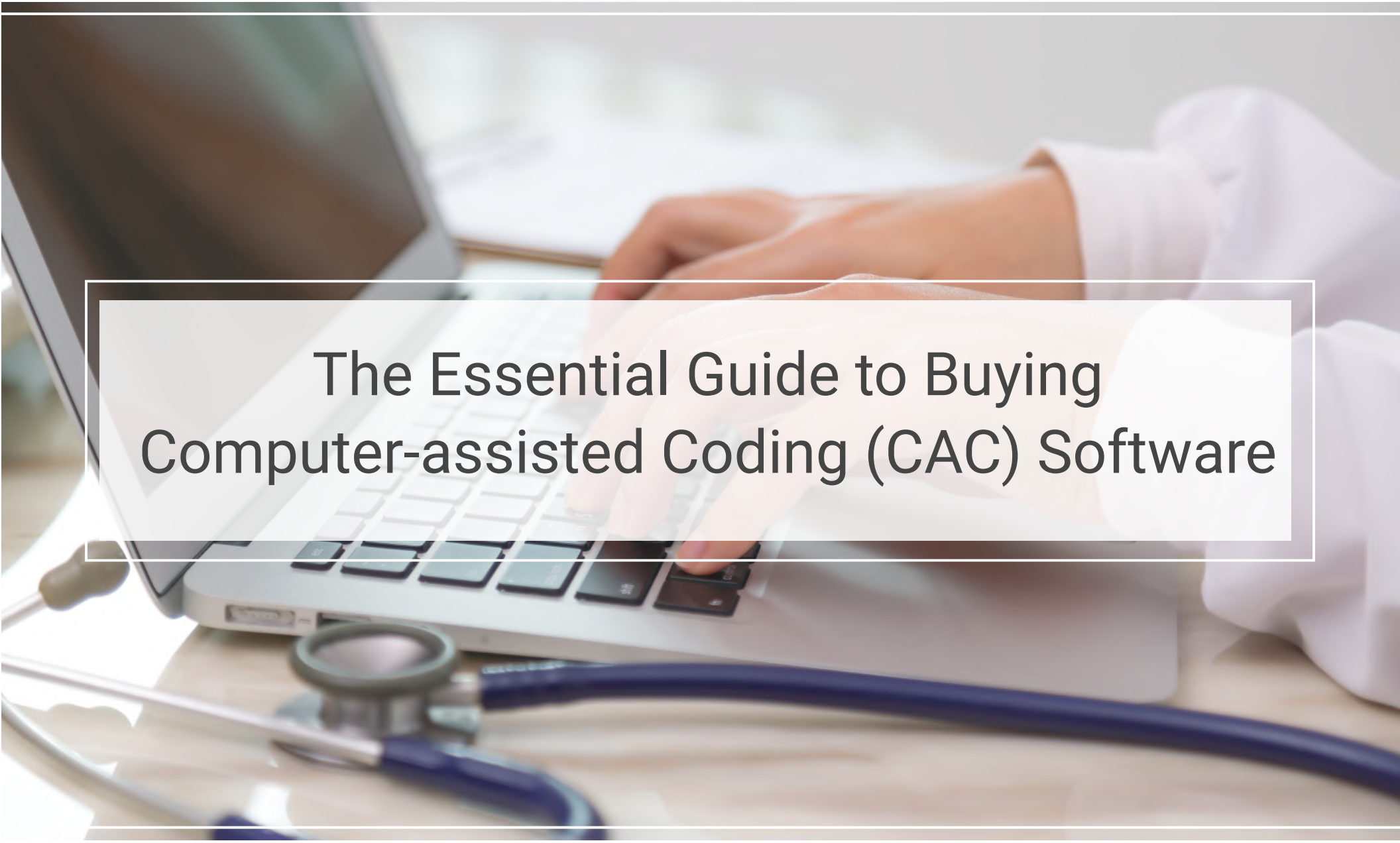

The Essential Guide to Buying Computer-assisted Coding (CAC) Software

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Executive Summary

This guide provides a data-driven approach when selecting Computer-assisted Coding (CAC) software for your Health Information Management (HIM) and Coding Department. This guide is for decision makers such as the Director, Health Information Management, Coding Director/Manager, IT Executives, Revenue Cycle Management and Chief Financial Officer, that are typically involved in evaluating CAC software solutions.

With their historic announcement in January 2015, Medicare set clear goals for "transitioning from volume to value." CMS is currently targeting 90 percent of all payments are tied to quality, or value, by 2018. Today's efforts include programs such as hospital Value-Based Payment, Hospital- Acquired Conditions and Bundled Payments for Care Improvement initiatives. Tomorrow's transformations in healthcare will bring about even more changes towards how hospitals will document, code, bill, and manage health information. With the transition from fee for service to value-based care, many hospitals are seeking to adopt technologies like CAC.

CAC is used to improve coding efficiency, decrease documentation deficiencies, improve code selection accuracy and reduce accounts receivable. Although there are other solutions that can do this for your hospital, CAC software accomplishes these business needs by optimizing coding workflow. A well-engineered CAC application delivers complete integration of data from disparate sources into a single repository, eliminating the need for coders to traverse multiple information systems.

An encoder is not CAC. In a traditional environment, coding is performed by manually reading clinical notes from an EHR, or health information systems, and then using either a logic tree, or a book-based encoder, to derive a code(s); essentially, manual abstraction of indicators that result in manual code generation.

On the other hand, **Artificial Intelligence-driven CAC**, leverages advanced technologies such as Natural Language Processing (NLP), Medical Ontologies, Computational Linguistics, and Machine Learning to read and interpret clinical notes. A CAC application identifies key coding indicators, also known as coding evidence, and the CAC application then suggests medical codes for that particular episode/diagnosis/procedure. The medical coder then simply reviews the suggested diagnosis and procedure codes and approves them for billing. CAC software should deliver all of the tools necessary to optimize coding, improve code selection and mitigate compliance risk. An effective CAC application will eliminate manual processes, rework, duplication of effort and provide the buyer with an opportunity to sunset expensive add-on softwares.

This document provides a step-by-step guide for assessing workflows and uncovering the advantages and benefits of implementing CAC for your hospital and helping select a CAC application/vendor that is able to "check off all of the boxes" during your evaluation.

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The Essential Guide to buying Computer-Assisted Coding Software

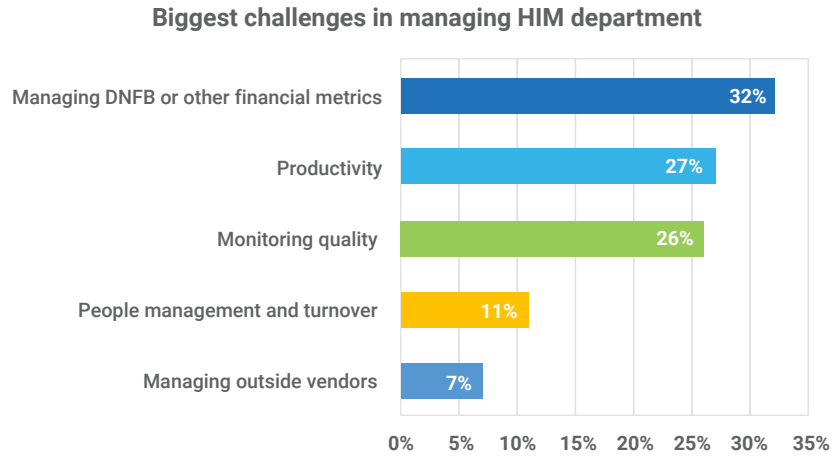
What is Computer-Assisted Coding (CAC)?

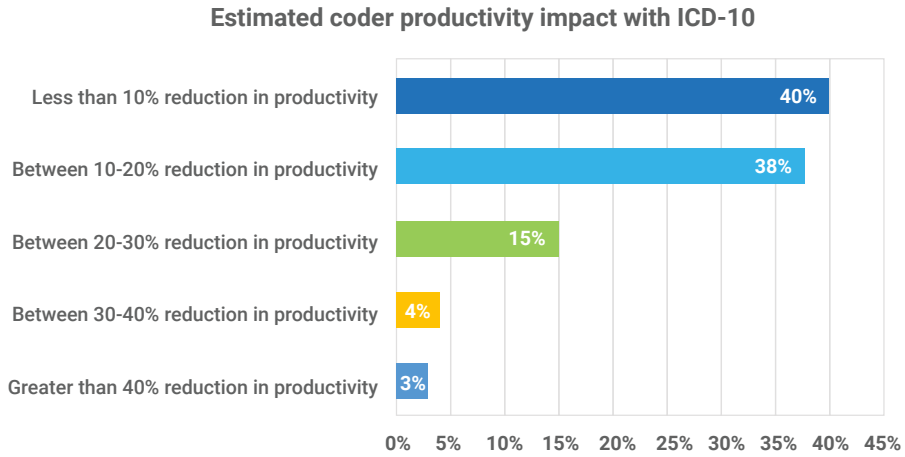
Computer-assisted Coding (CAC) software is an intelligent application that understands and contextually interprets clinical documentation to accurately suggest applicable ICD-10-CM/PCS, CPT/HCPCS for validation by a coder.

Impact of ICD -10

With the implementation of ICD-10, the number of diagnosis codes increased from 13,000 to 68,000, and the number of procedure codes also increased significantly. While the new codes allowed for greater specificity, a report from the RAND Corporation also notes that the new code set has resulted in a number of incurred costs including training, loss in productivity, system changes and updates.

A properly constructed CAC application will reduce the amount of time a coder needs to search for and identify a proper code by guiding the coder to the right area in a chart, automatically. For larger patient charts, CAC can significantly reduce the amount of time that a coder must scan the entire chart. A well-engineered CAC application will positively impact coding accuracy and coder efficiency leading to improved key financial metrics.





Source: 2016 HIM Benchmark Report from himagine solutions, Inc.

Steps to follow in the buying process of CAC software

Define the top 3 functional challenges you want to resolve.

Functional challenges can be the pain points due to the product's functionalities. E.g. worklists, inaccurate coding, more no. of clicks -coders etc.

Define the ideal scenario you will have when those challenges are resolved.

E.g. Prioritized worklists can make the case allocation task much easier and faster.

Define the top 3 business challenges that your hospital is facing & have/will fund to resolve those challenges.

Business challenges are the factors directly impacting the business. E.g. Higher denials, higher penalties, longer billing cycle etc.

Identify 1-3 persons in top leadership who will support and influence buying this product.

CFO, CIO, HIM, Coding director etc. who needs to get convinced about the product selection.

Discuss the functional AND business challenges with this person(s) & get their buy in.

E.g. How will this product solve the worklist issue? OR How much potential increase in CMI is possible with it?

Form a Core Project Team (user, manager, IT and CFO) who will participate in the evaluation, selection and buying process.

Core team shall be cross functional with people from IT, CDI, Coding, C-Suite etc.

Ensure that IT does not have any conflicting projects.

How much IT support will this product require? Generally cloud based software requires lesser IT support.

Ensure that funds are budgeted for this purchase.

It is important to check which quarter of the year the CAC is budgeted for.

Reach out to the vendors and evaluate their offering w.r.t. your challenges.

Give weightage to each challenge for every vendor and calculate the final score.

Check references and if needed ask for a POC (paid or unpaid)

POC can be of two types:
a) Evaluate vendor's performance on another hospital's data.
b) POC on your own data

Do not forget to include Pricing, ROI and Performance Guarantee in your decision criteria.

Vendor promising higher ROI at lesser price can be an effective solution.

How to determine it's time for CAC?

Health Information Management (HIM) Professionals are challenged to Reduce Costs, Improve Coder Productivity, Improve Coding Accuracy, Reduce Denials and Manage Financial Metrics such as: Coder Productivity, Coding Accuracy, Coding Compliance, CMI and DNFB. At the same time, the industry is increasingly challenged by entrenched inefficiencies due to manual processes, coder shortages, a new code set and suboptimal legacy systems that have not evolved in years.

Note: To determine if your Hospital is in need of evaluating CAC solutions, a readiness screening form has been attached as Appendix "A"

Trending CAC Software Features:

Though every hospital has unique needs, objectives and demands of a CAC software solution, the following bullet points can help make CAC an ideal solution for coding related challenges:

- Cloud-based software provides high data security & reliability
- Integrated Encoder
- Vendor-owned NLP engine/Artificial Intelligence/Machine Learning
- Single platform with a full suite of applications
- Reputable Vendor Customer Service and Implementation Plan
- Customization capability at reasonable cost
- Ability to personalize to the customer
- Collaboration capability between physician, coder and CDS
- Real-time Dashboards

How ABC Hospital Deployed the Ideal CAC Purchasing Process:

ABC Hospital is a 470+ bed acute care hospital located in NYC. ABC serves New York City borough residents as a leader in the areas of surgery, gastroenterology, pediatrics and pediatric gastroenterology, endocrinology, urology, oncology, orthopedics, surgery and maternal health.

Situation:

During the spring of 2015, ABC felt that their manual coding processes were going to hamper required workflow efficiency and functionality that was about to be impacted by the - at that time - pending ICD-10 migration, on October 1, 2015. Another objective was to reduce the time for coders to code each case. The immediate concern was proactively combating the forecasted productivity losses that would impact ABC coders with the change-over to ICD-10, which would negatively impact DNFB and hospital cash flow. ABC had a staff of 10 coders as well as an outsourced coding services vendor.

The Impressive Results:

In spite of hospitals experiencing anywhere between 10% - 50% loss in coder productivity with the ICD-10 transition, following one year of their CAC implementation, ABC Hospital has actually realized a 33% increase in coder productivity. DNFB was reduced by more than 50% and never exceeded 3.5 days. CMI was increased by 4%. Coder requested enhancements, like hot-keys and short-cuts, have helped ABC coders reduce the number of mouse clicks required to code. Denials were decreased by 30%, overall. These impressive results have helped ABC increase its reimbursement by almost $1MM and eliminate expensive legacy software and the outsourced coding vendor, saving over $300,000 per year. The resulting ROI for the CAC application was over 200%.

Step-by-step process followed by ABC hospital in choosing a CAC vendor:

Top 3 functional challenges ABC wanted to resolve from CAC.

a) Use of multiple platforms in capture of correct diagnosis & case assignment
b) Cut-down on the time for coders to code cases
c) Manual work-list (not automated)

Ideal scenario ABC had once those challenges were resolved.

a) Single platform will save 10-20% of the coders time
b) Lesser time per case will enhance coder productivity
c) Prioritized worklist will make the case allocation much easier and faster

Top 3 business challenges that ABC hospital was facing & had fund to resolve those challenges.

a) Lower CMI
b) Lesser coder productivity
c) Sub-optimal DRG assignment, resulting into less reimbursement

1-3 key persons in top leadership who influenced buying this product.

a) CFO
b) CIO
c) HIM Manager

How key people got convinced about the challenges solved by CAC.

a) **CFO** – 5X ROI, increase in CMI & lesser denials with CAC
b) **CIO** – No downtime, zero IT requirements, no servers installed (cloud-based)
c) **HIM Mgr.** – Built-in prioritized worklist, higher coder productivity

Core Project Team of ABC which participated in the evaluation, selection and buying process.

ABC had formed a core team , which included : One IT person, two coders , Coding Director, Director HIM & CFO.

Ensuring that IT does not have any conflicting projects.

Since this CAC product was cloud based software, it had almost zero IT support required. IT was in full support of it.

Ensuring that funds are budgeted for this purchase.

ABC had budgeted for CAC in May, 2015; 4 months before they started to evaluate CAC vendors.

Reaching out to the vendors and evaluate their offering w.r.t. your challenges.

ABC gave weightage to each of the challenges for every vendor and calculated final score. Three vendors with high score, got considered for next two steps.

Checking the references and if needed ask for a POC (paid or unpaid)

ABC management shortlisted 3 vendors based on the detailed evaluation process & asked for client referral & spoke to them about their experience.

Considering Pricing, ROI and Performance Guarantee in the decision criteria.

Vendor A was found to be better in price (50% lesser than others), ROI forecasting & references. Hence, ABC made the decision to select vendor A as its partner.

Completing the Vendor Evaluation Worksheet (Example of ABC Hospital)

On a scale of 1-5, ABC evaluated **vendor "A"** by scoring the following parameters (**1** being Not at all Effective and **5** being Extremely Effective)

Objectives *(Evaluate vendors on their solutions capability to meet these objectives)*	CFO (a)	CIO (b)	Coding Supervisor (c)	Coders (d)	Total Score (a+b+c+d)
Optimized Revenue Cycle Management					
Increased CMI	5	4	5	4	18
Decreased DNFB days; optimum billing cycle days	5	3	4	3	15
Decreased Denials due to coding error	5	3	4	4	16
Accelerate coder productivity					
Auto- code suggestions	3	3	5	5	16
Built-in deficiency management tools such as missing document reporting, ready/not ready workflow to improve coder productivity	3	2	4	5	14
Configurable worklists (allowing for prioritization)	3	2	5	5	15
No downtime/Availability	3	5	5	5	18
Reduced time to code per case	3	4	5	5	17
All required information in one place	2	2	4	4	12
Lesser denials & reduced penalties					
Complete audit trail; code is linked to clinical indicators and evidence	5	4	3	3	15
Built-in edits; to mitigate coding errors	5	3	3	4	15

CAC

HAC alerts	5	3	3	3	14
Workflow automation					
Coding Workflow Management for Concurrent and Retrospective Coding	3	3	4	5	15
Additional workflows: for pre-bill audit, post-bill audit & DRG Analysis	2	3	4	4	13
Encoder Integration	5	4	4	4	17
Accurate coding					
Auto-code suggestions	4	4	4	5	17
Reduce manual/time-wasting tasks for coders	4	3	4	5	16
Decreased chance of missing diagnosis/codes	3	3	5	5	16
Each code is linked with one or more clinical evidence	3	3	3	4	13
Optimized DRG code assignment	4	3	4	4	15
Grand Total Score	75	64	82	86	Σ=307

Grand total score (Σ) for each of the vendor was calculated by ABC hospital. Vendor 'A' scored 307 in the worksheet, whereas vendor 'B' & vendor 'C' got 285 and 281 respectively. ABC Hospital thusly evaluated vendor 'A' on price, ROI & performance guarantee criterias and found it exceptionally better than other vendors. Refer to Exhibit 1 and Exhibit 2, to check scores of vendor "B" & vendor "C".

Fill your own worksheet by referring to Appendix "C" and evaluate different vendors based on the key challenges resolved by their CAC software.

Top key performance indicators (KPIs) CAC should impact:

The ideal Computer-Assisted Coding (CAC) application should bring not only your clinical data, but all patient related data required for coding together in a single platform. This includes the ability of the CAC application to import image files, and handwritten notes. Your evaluation of vendors should include verifiable experiences of vendor customers where the customer experienced improved coding accuracy, efficiency and productivity. The application should empower coders to make faster, better-informed coding decisions and a significantly simplified and streamlined coding workflow. Request to speak to the end-users - coders and CDI staff that are using the system.

Common key measures when monitoring the effectiveness of CAC:

- CMI
- DNFC days (Discharged, not finally coded days)
- Denials
- Coder efficiency
- Compliance

CMI (Case Mix Index)

- Provides automatic code suggestions to ensure accuracy of codes and optimal DRG
- Increase CC/MCC capture to improve CMI, thereby reimbursement
- Reduce instances of missing codes to improve overall clinical documentation improvement
- Provides coders with a view of multiple DRGs and the reimbursement impact

DNFC days (Discharge not finally Coded)

- Eliminates the need for coders to traverse multiple information systems in search of clinical indicators to support code selection
- Increases coder productivity by providing automated code suggestion, which improves time to code and ultimately, DNFC
- Built-in deficiency management tools such as ready/not ready workflow case staging, missing document reporting, physician queries all lead to improved coder productivity
- Easy-to-configure/dynamic worklists enable management to automate case assignment by first-in, first-out (FIFO), high dollar, payer, etc. which helps to contain DNFB at optimal numbers

Denials

- A complete and visually verifiable audit trail links a code to the clinical evidence in the chart
- Built- in, customizable edits help prevent errors and proactively reduce potential denials

Coder Efficiency

- One screen from which to work from in a single application logically increases coder efficiency and productivity
- Automated code suggestions should lead to reduced time to code
- Application availability - be aware of system downtime (scheduled or unscheduled), screen freezing, application crashing, all of which are time wasters and points of end-user frustration
- Management dashboards/scorecards - are they provided to the user in real-time, or is data retrospective, impacting ability to take action

Appendix 'A'

CAC Readiness Screening (Example of ABC hospital)

Do you have all of the necessary requirements? Answer "Yes" or "No" to these questions to assess current state of your coding workflow:

1. Do your coders spend more time shuffling between information systems to review clinical documents than coding a case? What are their time-wasters?

    a. On average, my coders have 10 to 15, or more, clicks per encounter to code a case.
    b. My coders have to login to 3-5 different systems to complete coding such as: VPN/ Citrix, EHR, Lab, Xray, Encoder, Abstraction, Scanning Systems etc.?
    c. Our coders create spreadsheets and/or use sticky notes to keep track of their productivity, missing documents, cases on hold, coding queries etc.?
    d. My coders are unable to code once a month, or more, due to system downtime, system upgrades, or coding software issues.

2. Is your coding productivity lower than the national average?

    a. Inpatient coders code at least three (3) charts per hour?
    b. Ambulatory, Outpatient and Interventional Surgery and Procedures Coders coding five (5) encounters per hour?
    c. Emergency Department coders doing fifteen (15) encounters per hour?
    d. Ancillary Coders coding thirty (30) reports per hour?

3. Do you have challenges tracking and reporting on key coding metrics?

    a. Discharge Not Final Coded Days (DNFC) and Revenue.
    b. Coder Productivity per day, week and month.
    c. Coder Quality.
    d. Denials due to Coding Errors.

4. Is there an automated process in which cases are efficiently prioritized, reviewed, and managed every day?

    a. Do you have resources assigned to manage worklists, case assignment and coding deficiency management?

5. Is your organization challenged by coding backlogs that impact your DNFC days and DNBF dollars/account receivable?

6. Do you have difficulty in finding experienced coders?

7. Are your CDI team and coders able to easily collaborate with each other, as well as CDI/Coding management, when working on difficult cases that require additional assistance?

8. Is your organization seeking to streamline remote coding workflow? Or, are you seeking to eliminate outsourced coding cost?

9. Compliance - does your coding workflow include and effective coderd auditing process with quality improvement feedback for coders?

    a. When charts are audited can you easily and immediately substantiate code selection for the auditor with required evidence and specificity?

Please tally your "Yes" answers to determine your readiness score:

Decoding Your Score

1. If you score a total of 0-2, CAC may or may not be a solution for you at present.

2. If your score is between 3-5, you're most likely ready to evaluate CAC. You may want to think about collecting more internal data to prepare your business case.

3. If you have scored between 6-10, it's time to begin your CAC evaluation process!

Note: Questions 1, 2 & 3 contain four options each. One or more "Yes" responses for questions 1, 2 & 3 will be considered as only one "Yes" when calculating the final score.

Appendix 'B'

What questions to ask when evaluating CAC for your organization?

Now that you have your handful of options, it's time to dig a little deeper — demos! Software demonstrations are the best way to determine which CAC software fits your specific needs.

- Does the vendor have a verifiable history of excellent support and efficient customer service?
- Is the solution customizable to adapt to your requirements?
- Does the application deploy the most advanced security operations to prevent nefarious activities like Malware/Ransomware?
- Does the software solution experience any downtime? Is it cloud-based, or an on-site deployment?
- How user-friendly is the solution?
- How easy is the implementation? What is the implementation timeline?
- Does the solution require changes to your business processes rather than configuring the CAC application to meet your processes?
- Does the vendor have like-sized customers?
- How innovative is the solution compared to others on the market? What are the core technologies?
- Does the solution satisfy some of your less important, "nice to have" requirements?

The following questions will help you in evaluating different vendors with regards to features and functionalities:

- What is the impact of the new code set on my current system, the end-user workflow, interfaces?
- Does the application provide the capability for me to easily manage work lists?
- Do coders still have to navigate to other systems? To what extent?
- Can I customize queries? Is the query workflow automated? Are the queries industry standard? Does the system eliminate duplicate queries? Can queries be flagged for a deficiency and then tracked to resolution?
- How much training is involved and will the vendor provide training?
- What is the IT cost, interfaces? What are IT support requirements after go-live?
- What technology has been used to develop the vendor's CAC?
- When will you receive a return on investment (ROI), or what is the estimated payback period?
- What is the cost benefit of HIM coder headcount versus the fees for CAC software licensing, implementation, integration, training, and support/maintenance?
- Does the CAC software application integrate with your organization's encoder?
- Does the CAC software application integrate with your EHR/EMR?
- Is all of your clinical documentation able to be processed by the CAC's natural language processing engine?
- What reports will be available? What percent of your notes are still hand-written?
- What manual coding processes might remain following the implementation of CAC?
- Who manages all of the frequent updates to the CAC/encoder software? You and your IT staff, or the vendor?
- Does the CAC application have the ability to learn and improve code suggestion without explicitly being programmed, or are there vendor-employed coders performing 'back-office' coding to manually program the CAC application to make it better?

Appendix 'C'

CAC Vendor Evaluation Worksheet

On a scale of 1-5, Score the following parameters (**1** being Not at all Effective and **5** being Extremely Effective)

Objectives *(Evaluate vendors on their solutions capability to meet these objectives)*	Person 1 (a)	Person 2 (b)	Person 3 (c)	Person 4 (d)	Total Score (a+b+c+d)
Optimized Revenue Cycle Management					
Increased CMI					
Decreased DNFB days; optimum billing cycle days					
Decreased Denials due to coding error					
Accelerate coder productivity					
Auto- code suggestions					
Built-in deficiency management tools such as missing document reporting, ready/not ready workflow to improve coder productivity					
Configurable worklists (allowing for prioritization)					
No downtime/Availability					
Reduced time to code per case					
All required information in one place					
Lesser denials & reduced penalties					
Complete audit trail; code is linked to clinical indicators and evidence					
Built-in edits; to mitigate coding errors					

● *HAC alerts*					
Workflow automation					
● *Coding Workflow Management for Concurrent and Retrospective Coding*					
● *Additional workflows: for pre-bill audit, post-bill audit & DRG Analysis*					
● *Encoder Integration*					
Accurate coding					
● *Auto- code suggestions*					
● *Reduce manual/time-wasting tasks for coders*					
● *Decreased chance of missing diagnosis/codes*					
● *Each code is linked with one or more clinical evidence*					
● *Optimized DRG code assignment*					
Grand Total Score					Σ=

CAC

Exhibit 1: Vendor "B" Evaluation

On a scale of 1-5, ABC evaluated **vendor "B"** by scoring the following parameters (**1** being Not at all Effective and **5** being Extremely Effective)

Objectives *(Evaluate vendors on their solutions capability to meet these objectives)*	Person 1 (a)	Person 2 (b)	Person 3 (c)	Person 4 (d)	Total Score (a+b+c+d)
Optimized Revenue Cycle Management					
Increased CMI	4	3	4	3	14
Decreased DNFB days; optimum billing cycle days	5	3	3	3	14
Decreased Denials due to coding error	4	3	4	3	14
Accelerate coder productivity					
Auto- code suggestions	3	3	4	5	15
Built-in deficiency management tools such as missing document reporting, ready/not ready workflow to improve coder productivity	3	2	3	4	12
Configurable worklists (allowing for prioritization)	3	2	4	5	14
No downtime/Availability	3	5	5	5	18
Reduced time to code per case	3	4	4	5	16
All required information in one place	2	2	4	4	12
Lesser denials & reduced penalties					
Complete audit trail; code is linked to clinical indicators and evidence	4	4	3	3	14
Built-in edits; to mitigate coding errors	5	2	3	4	14

CAC

HAC alerts	4	3	3	3	13
Workflow automation					
Coding Workflow Management for Concurrent and Retrospective Coding	3	3	3	5	14
Additional workflows: for pre-bill audit, post-bill audit & DRG Analysis	2	3	4	4	13
Encoder Integration	2	4	4	4	14
Accurate coding					
Auto- code suggestions	4	4	4	4	18
Reduce manual/time-wasting tasks for coders	2	3	4	5	14
Decreased chance of missing diagnosis/codes	3	3	4	4	14
Each code is linked with one or more clinical evidence	3	3	3	4	13
Optimized DRG code assignment	4	3	4	4	15
Grand Total Score	75	64	82	86	Σ=285

Exhibit 2: Vendor "C" Evaluation

On a scale of 1-5, ABC evaluated **vendor "C"** by scoring the following parameters (**1** being Not at all Effective and **5** being Extremely Effective)

Objectives *(Evaluate vendors on their solutions capability to meet these objectives)*	Person 1 (a)	Person 2 (b)	Person 3 (c)	Person 4 (d)	Total Score (a+b+c+d)
Optimized Revenue Cycle Management					
Increased CMI	5	3	3	3	14
Decreased DNFB days; optimum billing cycle days	4	3	4	3	14
Decreased Denials due to coding error	5	3	3	3	14
Accelerate coder productivity					
Auto-code suggestions	3	3	4	5	15
Built-in deficiency management tools such as missing document reporting, ready/not ready workflow to improve coder productivity	3	2	3	4	12
Configurable worklists (allowing for prioritization)	5	3	3	3	14
No downtime/Availability	3	5	5	5	18
Reduced time to code per case	3	4	4	5	16
All required information in one place	2	2	4	4	12
Lesser denials & reduced penalties					
Complete audit trail; code is linked to clinical indicators and evidence	5	3	3	3	14
Built-in edits; to mitigate coding errors	5	2	3	4	14

HAC alerts	4	3	3	3	13
Workflow automation					
Coding Workflow Management for Concurrent and Retrospective Coding	4	3	4	3	14
Additional workflows: for pre-bill audit, post-bill audit & DRG Analysis	2	3	4	4	13
Encoder Integration	5	3	3	3	14
Accurate coding					
Auto- code suggestions	4	3	4	3	16
Reduce manual/time-wasting tasks for coders	2	3	4	5	14
Decreased chance of missing diagnosis/codes	2	3	4	5	14
Each code is linked with one or more clinical evidence	3	3	3	4	13
Optimized DRG code assignment	4	3	4	4	15
Grand Total Score	75	64	82	86	Σ=283

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