Computer Assisted Coding: A Path to Mitigate Risk & Reduce Cost

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We are dedicated to providing healthcare services that meet each community's local healthcare needs.

We seek to integrate various services to deliver patient care with maximum quality and efficiency.

Our approach includes focusing on quality; streamlining operations; sharing technology, equipment and personnel where appropriate; and using economies of scale when contracting for medical supplies and administrative services.
HIM Shared Services

- 8 (HSC) Service Centers support HIM functions for all US based HCA hospitals
- All hospital coding is supported by one of the HSCs
- All coders work remotely
Key Objectives

• Understand computer assisted coding (CAC) including natural language processing (NLP) technology
• Identify considerations for implementing CAC
• Explore the long term labor costs savings that can be achieved using CAC
• Analyze how CAC can impact coder staffing in I-9 and I-10 environments
• Using CAC technology for coder training
• Utilize I-10 data from CAC to perform a revenue impact analysis
Definition

- **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 electronic clinical documentation provided by healthcare practitioners.
Computer Assisted Coding
NLP Engine Process

Knowledge Based
• Diagnoses, signs, symptoms, history
• Anatomy, microbiology
• Procedures, length, views, modality, instrument

Rule Based
• Coding Guidelines
• Hierarchical knowledge bases, negation, context. inference
• Payer reporting requirements

Medical Knowledge

Coding Knowledge

Facts

NLP Engine

Coding/Billing Rules

Codes & Billing

Medical record discrete electronic information from different data sources
How to Avoid Common Road Blocks

Roadblock

- Disparate Systems
- Change Management
- Electronic vs. Paper
- Defining Stability & Success
- Measuring Accuracy

Solution

Ensure proper integration between systems and data flows from EHR to CAC to Billing.

Consider how changes will be operationalized, CAC is not only a process change.

Understand how much of your data is electronic by patient type.

Define stabilization criteria and success measurement indicators. Don’t measure until your system is stable.

Create meaningful audit trails to understand accuracy of CAC vs. coder.
Disparate Systems

Ensure proper integration between systems and data flows from EHR to CAC to Billing

EHR → Electronic documentation → CAC Engine → Patient Demographics → Coding/Abstract Information → Billing System
Consider how changes will be operationalized, CAC is not only a process change.
Electronic vs. Paper

Understand how much of your data is electronic by patient type.

<table>
<thead>
<tr>
<th>Electronic Medical Record</th>
<th>Electronic orders</th>
<th>Electronic results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic OP</td>
<td>Emergency Department</td>
<td>Inpatients</td>
</tr>
<tr>
<td></td>
<td>Day Surgery</td>
<td>Observation</td>
</tr>
</tbody>
</table>
Defining Stability and Success

Define stabilization criteria and success measurement indicators.

<table>
<thead>
<tr>
<th>Metric</th>
<th>Description</th>
<th>Baseline</th>
<th>Target Outcome Post go-live</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coder Productivity</td>
<td>Improve coder productivity for Day Surgery</td>
<td>6.25/hr</td>
<td>13/hr (108% gain)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>25/hr</td>
<td>30/hr (20% gain)</td>
</tr>
<tr>
<td>Coder Productivity</td>
<td>Improve coder productivity for Diagnostic Outpatients</td>
<td>37.5/hr</td>
<td>65/hr (73% gain)</td>
</tr>
<tr>
<td>Coder Productivity</td>
<td>Improve coder productivity for Observation</td>
<td>6.35/hr</td>
<td>10/hr (60% gain)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coder Productivity</td>
<td>Improve coder productivity for Inpatient</td>
<td>4/hr</td>
<td>4.76 (19% gain)</td>
</tr>
<tr>
<td>CAC Accuracy Rate</td>
<td>Accuracy rate of codes generated from CAC engine</td>
<td></td>
<td>95%</td>
</tr>
<tr>
<td>CAC integration with Billing System</td>
<td>Ability for CAC to interface to Billing System to send discrete coding data</td>
<td></td>
<td>Successful CAC integration with Billing System</td>
</tr>
<tr>
<td>CAC integration with EMR</td>
<td>Ability for CAC to interface with EMR to provide discrete electronic medical record data (as applicable) and scanned images</td>
<td></td>
<td>Successful CAC integration with EMR</td>
</tr>
</tbody>
</table>
Defining Stability and Success

However...Don’t measure until your system is stable.

<table>
<thead>
<tr>
<th>Metric</th>
<th>Description</th>
<th>Baseline</th>
<th>Target Outcome Post go-live</th>
<th>Stabilization Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coder Productivity</td>
<td>Improve coder productivity for Day Surgery</td>
<td>6.25/hr</td>
<td>13/hr (108% gain)</td>
<td>X days post go live</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>25/hr</td>
<td></td>
<td>30/hr (20% gain)</td>
<td>X days post go live</td>
</tr>
<tr>
<td>Diagnostic Outpatients</td>
<td>37.5/hr</td>
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<td>Inpatient</td>
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<td></td>
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<td>X days post go live</td>
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<tr>
<td>CAC Accuracy Rate</td>
<td>Accuracy rate of codes generated from CAC engine</td>
<td></td>
<td>95%</td>
<td>Accuracy rates reporting live for XX days</td>
</tr>
<tr>
<td>CAC integration with Billing System</td>
<td>Ability for CAC to interface to Billing System to send discrete coding data</td>
<td></td>
<td>Successful CAC integration with Billing System</td>
<td>100% of billing data crossing for X days</td>
</tr>
<tr>
<td>CAC integration with EMR</td>
<td>Ability for CAC to interface with EMR to provide discrete electronic medical record data (as applicable) and scanned images</td>
<td></td>
<td>Successful CAC integration with EMR</td>
<td>90% of interfaces working correctly for X days</td>
</tr>
</tbody>
</table>
Create meaningful audit trails to understand accuracy of CAC vs. coder
What Are My Coder Risks?

**Significant Coder Shortages**, predicted to become significantly worse with ICD-10

AHIMA projects up to **50% reduction in coder productivity** with the implementation of ICD-10

Cost of **outsourced coding** and/or **overtime** due to coding shortages

Overall healthcare **cost reduction pressures**.
CAC Impact to Coding Labor Cost

Coder’s World Prior to CAC

Medical Record
Whether paper or electronic, entire record reviewed by coder

Coder Reviews
Selects codes via Encoder, performs abstraction. Coder codes 100% of codes

Billing System
Send to Billing System
CAC Impact to Coding Labor Cost

Coder’s World with CAC

Computer Assisted Coding
Assigns codes by evaluating all of the electronic documentation

Coder Reviews
Coder *AUDITS* the codes presented by the CAC, and supplements from paper record

Billing System
Send to Billing System
CAC Allows Productivity Increase

• Coder presented with codes to validate
• CAC allows coder to “hot key” from code to source documentation in electronic medical record to validate
• Adding/deleting/editing codes should be on an exception basis
• CAC product may allow streamlined workflow and abstracting capabilities
## Sample Productivity Improvements

<table>
<thead>
<tr>
<th>Patient Type</th>
<th>Baseline</th>
<th>Target</th>
<th>% Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostic Outpatient</td>
<td>37.5/hr</td>
<td>65/hr</td>
<td>73%</td>
</tr>
<tr>
<td>Same Day Surgery</td>
<td>6.25/hr</td>
<td>13/hr</td>
<td>108%</td>
</tr>
<tr>
<td>Emergency Department</td>
<td>25/hr</td>
<td>30/hr</td>
<td>20%</td>
</tr>
<tr>
<td>Observation</td>
<td>6.25/hr</td>
<td>10/hr</td>
<td>60%</td>
</tr>
<tr>
<td>Inpatient</td>
<td>4/hr</td>
<td>4.76/hr</td>
<td>19%</td>
</tr>
</tbody>
</table>
## Sample Staffing Requirements

### Staffing Prior to CAC

<table>
<thead>
<tr>
<th>Patient Type</th>
<th>Annual Volume</th>
<th>Prod Std (Min/Chart)</th>
<th>Prod Std (Charts/Hr)</th>
<th>Total Charts Coded per FTE (1810 hrs/Yr)</th>
<th>Coding FTEs Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient</td>
<td>90,000</td>
<td>15 min.</td>
<td>4.00</td>
<td>7,240</td>
<td>12.43</td>
</tr>
<tr>
<td>Day Surgery</td>
<td>60,000</td>
<td>9.6 min.</td>
<td>6.25</td>
<td>11,313</td>
<td>5.30</td>
</tr>
<tr>
<td>Observation</td>
<td>40,000</td>
<td>9.6 min.</td>
<td>6.25</td>
<td>11,313</td>
<td>3.54</td>
</tr>
<tr>
<td>Emergency Dept</td>
<td>125,000</td>
<td>2.4 min.</td>
<td>25.00</td>
<td>45,250</td>
<td>2.76</td>
</tr>
<tr>
<td>Diagnostic Outpatient</td>
<td>150,000</td>
<td>1.6 min.</td>
<td>37.50</td>
<td>67,875</td>
<td>2.21</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>142,990</strong></td>
<td><strong>16 min.</strong></td>
<td><strong>26.24</strong></td>
<td><strong>142,990</strong></td>
<td><strong>26.24</strong></td>
</tr>
</tbody>
</table>
# Sample Staffing Requirements

## Staffing After to CAC

<table>
<thead>
<tr>
<th>Patient Type</th>
<th>Annual Volume</th>
<th>Prod Std (Min/Chart)</th>
<th>Prod Std (Charts/Hr)</th>
<th>Total Charts Coded per FTE (1810 hrs/Yr)</th>
<th>Coding FTEs Required</th>
<th>Previous FTEs Required</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient</td>
<td>90,000</td>
<td>12.6 min.</td>
<td>4.76</td>
<td>8,616</td>
<td>10.45</td>
<td>12.43</td>
<td>1.98</td>
</tr>
<tr>
<td>Day Surgery</td>
<td>60,000</td>
<td>4.62 min.</td>
<td>13.00</td>
<td>23,530</td>
<td>2.55</td>
<td>5.3</td>
<td>2.75</td>
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<tr>
<td>Observation</td>
<td>40,000</td>
<td>6 min.</td>
<td>10.00</td>
<td>18,100</td>
<td>2.21</td>
<td>3.54</td>
<td>1.33</td>
</tr>
<tr>
<td>Emergency Dept</td>
<td>125,000</td>
<td>2 min.</td>
<td>30.00</td>
<td>54,300</td>
<td>2.30</td>
<td>2.76</td>
<td>0.46</td>
</tr>
<tr>
<td>Diagnostic Outpatient</td>
<td>150,000</td>
<td>1 min.</td>
<td>60.00</td>
<td>108,600</td>
<td>1.38</td>
<td>2.21</td>
<td>0.83</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>213,146</strong></td>
<td></td>
<td></td>
<td><strong>18.89</strong></td>
<td><strong>26.24</strong></td>
<td></td>
<td><strong>7.35</strong></td>
</tr>
</tbody>
</table>
# Coding Labor Costs

<table>
<thead>
<tr>
<th>Patient Type</th>
<th>AVG Hourly Rate</th>
<th>Required Coders Pre CAC</th>
<th>Annual Labor Expense Pre CAC</th>
<th>Required Coders Post CAC</th>
<th>Annual Labor Expense Post CAC</th>
<th>Annual Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient</td>
<td>$25.00</td>
<td>12.43</td>
<td>$646,360.00</td>
<td>10.45</td>
<td>$543,400.00</td>
<td>$102,960.00</td>
</tr>
<tr>
<td>Day Surgery</td>
<td>$21.50</td>
<td>5.3</td>
<td>$237,016.00</td>
<td>2.55</td>
<td>$114,036.00</td>
<td>$122,980.00</td>
</tr>
<tr>
<td>Observation</td>
<td>$21.50</td>
<td>3.54</td>
<td>$158,308.80</td>
<td>2.21</td>
<td>$98,831.20</td>
<td>$59,477.60</td>
</tr>
<tr>
<td>Emergency Dept</td>
<td>$18.50</td>
<td>2.76</td>
<td>$106,204.80</td>
<td>2.3</td>
<td>$88,504.00</td>
<td>$17,700.80</td>
</tr>
<tr>
<td>Diagnostic OP</td>
<td>$18.50</td>
<td>2.21</td>
<td>$85,040.80</td>
<td>1.38</td>
<td>$53,102.40</td>
<td>$31,938.40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>26.24</td>
<td><strong>$1,232,930.40</strong></td>
<td>18.89</td>
<td><strong>$897,873.60</strong></td>
<td><strong>$335,056.80</strong></td>
</tr>
</tbody>
</table>

Annual labor calculated at 2080/hr worked
Coding Labor Costs

• Driven by coder productivity improvements
  – Availability of electronic documentation
  – Accuracy of CAC engine
  – Improvements in coder workflow
  – Streamline abstract process
Coding Labor Costs

- Improved coder productivity
- Improved coding consistency and more comprehensive coding
- Reduction of contract labor cost
- Reduction in the number of coding FTEs
I-10 Coding Staff Challenges

- AHIMA predicts 50% reduction in coder productivity
  - Biggest impact will be inpatient coding
- Reduction in available coding resources
  - Retirement of coders
  - Fewer new coders entering the workforce
- HIM absorbing physician organization coding
- How do you do more with less?
CAC – Mitigation Strategy

• Productivity gains from CAC can lessen I-10 impact
• Target outpatient coders that can transition to inpatient coders as OP productivity increases
• Begin transition as soon as possible to allow adequate time for training
• Determine if CAC vendor can process provider based E&M codes
CAC – Education Tool

• Coder Education
  – Review codes presented in CAC against source documentation
  – Code chart manually and compare against CAC results
  – Useful when transitioning coder from outpatient to inpatient
  – Training tool for new coders
CAC – I-10 Revenue Impact Analysis

- Most conversations performed utilizing “approximate code match” methodology
- Issues with one to many codes

Many possible codes
CAC – I-10 Revenue Impact Analysis

- Determine top 25 MS-DRGs
- Select random sample from previous 6 months
- Utilize CAC to “native code” charts in I-10 and I-9
- Source documentation used for coding process
- Run codes through grouper to compare I-9 MS-DRG to I-10 MS-DRG
- Compare differences against medical record to identify documentation improvement opportunities