READY. SET. GO.
We’ll get you to ICD-10 in record time.

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Computer-assisted Coding – Blazing a Trail to ICD 10
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• Although we have tried to include accurate and comprehensive information in this presentation, please remember it is not intended as legal or other professional advice.
Goals of the Presentation

• Why CAC – The new technology
• Technology and a little history
• Definitions of CAC and NLP
• More about NLP – Technology behind CAC
• CAC – Blazing the trail to ICD-10
• Potential benefits of CAC
• Obstructers with CAC
• Challenges
• Evaluations
• Conclusion

• Coder shortages which will likely become significantly worse with ICD-10
• AHIMA projecting up to 50% reduction in coder productivity with implementation of ICD-10
• Increased pressures to reduce denials and streamline process
• Cost of outsourced coding and/or overtime
• RAC audits ongoing
• Increased coding variability
• Cost reduction pressures
Various Types of Coding Systems

• AutoCoders
  – Assign codes based upon structured input
  – Typically within EMR documentation systems that assign diagnoses or procedures based upon drop-down selection of fields during physician documentation process
  – Do not take free text into account
  – No actual coding knowledge of coding rules

• Coding Assist Tools
  – Tools that guide coders through a process to determine a code.
  – Examples are Encoders, E/M Assignment Tools
  – Coding rules embedded in user pathways (coder choice)
  – Some products marketed as CAC are actually coding assist tools

• Computer-Assisted Coding (CAC)
  – NLP is the technology behind CAC
  – Evaluates text and automatically assigns codes
  – May or may not have knowledge of coding guidelines/rules
Evolution of Technology Influencing Coding Workflow

- Potential future features that allow analysis, enhanced business intelligence, improved compliance using both rules and linguistics to identify potential issues, statistical or random sampling.
- Use of structured text and NLP in gleaning information within the electronic health record.
- Encoders that assist in code assignment.
- Additional features to improve concurrent coding, integrate coding workflow, provide reimbursement analysis, enable coding from a more complete medical record, and address delinquent records management more systematically.
Definitions

• Computer Assisted Coding (CAC): “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.”

• Natural Language Processing (NLP): A range of computational techniques for analyzing and representing naturally occurring text (free text) for the purpose of achieving human-like language processing for knowledge-intensive applications.
  – Delving into Computer Assisted Coding, AHIMA Practice Brief
What is Natural Language Processing (NLP) and why does it make a difference?

• Natural Language Processing (NLP)
  – Software that can ‘read’ physician documentation, identify key clinical facts and map those facts to codes
  – Physicians use standard dictation/transcription, speech recognition, or templates with free-text fields

• NLP is the technology behind CAC and is the key determining factor as to whether a CAC solution may succeed or fail.
  – There are multiple technologies used for NLP in the CAC industry from basic terminology matching to advanced artificial intelligence.
  – This is the “brains” of the system that actually assigns the codes to be presented in the user interface.
  – You cannot have CAC solutions without some form of NLP.
## NLP Methodologies

<table>
<thead>
<tr>
<th>NLP Approach</th>
<th>Precision (Right Answers)</th>
<th>Recall (Hits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symbolic Rules &amp; Statistical Components (LifeCode®)</td>
<td>High</td>
<td>Correct</td>
</tr>
<tr>
<td>Symbolic Rules</td>
<td>High</td>
<td>Few</td>
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<tr>
<td>Statistical</td>
<td>Low/Medium</td>
<td>Many</td>
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<tr>
<td>Pattern Matching</td>
<td>Low/Medium</td>
<td>Few</td>
</tr>
<tr>
<td>Medical Terminology Matching</td>
<td>Low</td>
<td>Very Many</td>
</tr>
</tbody>
</table>
How does each NLP technology perform?

**NLP Competitive Landscape**

Precision (False/Positive)

- **Identified 17 codes, 16 correct, missed 4**
- **Identified 10 codes, 5 correct, missed 15**
- **Identified 9 codes, 4 correct, missed 16**

- Symbolic/Statistical
  - Statistical
  - Pattern Matching
  - Med. Dictionary
  - Matching

- Identified 100 Potential Codes via Medical Terms
Why Does This Matter?

• Each NLP evaluates text differently
  – “The patient has breast cancer”
  – “The patient had breast cancer in the 1980’s”
  – “The patient’s mother had breast cancer 17 years ago”
  – “The patient has h/o brca”

• Language Evaluation
  – “the patient has pain in the abdomen as well as the neck”

• Negation
  – “the patient has chest pain and denies SOB and abdominal pain”

• Each NLP engine provided by each vendor will code these examples entirely differently!
ICD-10 Ps Not On Hold

- ICD-10 transition has no grace period – October 1, 2014
- Dual coding environment
- Before October 1, 2014
  - Training coders on real cases
    - Validating system updates/replacements
    - Testing system interface changes
    - Creating baseline set of ICD-10 data
- Starting October 1, 2014
  - Charts with date of service prior to 10/1/2014 continue with ICD-9 coding
  - Coding workflow must handle both ICD-9 and ICD-10 codes for some period of time
ICD-10 More Complex Than ICD-9

**Diagnosis Codes**

ICD-9: 17,000  
ICD-10: 68,000

**Procedure Codes**

ICD-9: 4,000  
ICD-10: 87,000

ICD diagnosis codes are used by inpatient and outpatient providers for billing and reimbursement.  
ICD procedure codes are used by only inpatient providers for billing and reimbursement.
ICD-9-CM vs. ICD-10-CM Diagnosis Codes: Sprained & Strained Ankles

Sample of Complexity

ICD-9 Codes: 4
845.00 Sprain and strain of ankle unspecified site
845.01 Sprain and strain of ankle, deltoid ligament, or internal calcaneal ligament
845.02 Sprain and strain of ankle, calcaneofibular ligament
845.03 Sprain and strain of ankle, tibiofibular (ligament) diuse

ICD-10 Codes: 72
Comparing ICD-9 with ICD-10

Factors influencing health status and contact with health services (Z00-99)

External causes of morbidity (V01-Y95)

Injury, poisoning and certain other consequences of external causes...

Symptoms, signs and abnormal clinical and laboratory findings, .......

Congenital malformations, deformations and chromosomal...

Certain conditions originating in the perinatal period (P00-P96)

Pregnancy, childbirth and the puerperium (O00-O99)

Diseases of the genitourinary system (N00-N99)

Diseases of the musculoskeletal system and connective tissue (M00-M99)

Diseases of the skin and subcutaneous tissue (L00-L99)

Diseases of the digestive system (K00-K94)

Diseases of the respiratory system (J00-J99)

Diseases of the circulatory system (I00-I99)

Diseases of the ear and mastoid process (H80-H95)

Diseases of the eye and adnexa (H00-H59)
CAC – An Integral Role for ICD-10

- Computer-assisted coding addresses the challenges of ICD-10
  - Loss of productivity
  - Coder learning curve
  - More complex codes
  - More detailed reading of medical records
  - Changes in guidelines
  - Complete redesign of procedure codes
Potential CAC Benefits

• Maximize coder efficiency
  • Streamline workflow
  • Reduce time to complete case

• Improve coding quality
  • Increase accuracy (lessen denials and rework)
  • Gain consistency within the coding department

• Improve case mix index

• Shorten revenue cycle

• Reduce expenses
  • Coder overtime
  • External/contract coders

• Improve compliance

• Ease the transition to ICD-10
  – AHIMA estimates 10% - 50% reduction in productivity depending upon area (e.g., IP, OP, Professional, etc.)
  – Hard to quantify revenue impact
Results: Diagnosis Coder Productivity

167% Increase over prior productivity standard
Results: ED Coder Productivity

August = 89% Increase over prior productivity standard
Results: Surgery/Observation Productivity

August = 84% Increase over prior productivity standard
Results: Inpatient Coder Productivity

August = 14% Increase over prior productivity standard
Results

- Dramatic productivity gains include adding up front medical necessity screening and charge review to coders workflow
- Coder productivity continues to increase as they become more proficient with the system
- Feedback from the coders has been largely positive
  - More they use, more they are comfortable with – and like it
- Maintain greater than 95% accuracy
  - Post Actus Accuracy for diagnostics and ED remains consistent within 95-100% accuracy even with the significant increases in production
  - Inpt, ambulatory surgery, outpatient in a bed and Observation are more recent go lives and quality has not yet been evaluated
Results – continued

- Reduction of salary through position attrition 5.16 FTEs
  - $245,181. FY 11 YTD (July 1, 2010 - April 30, 2011)
  - With Benefits this is $301,573.00
- Positions Hospital for Unprecedented Gains
Coder Productivity Increased 21%

December 2008 thru May, 2010
Actus Impact - Overtime

Overtime
Initial 85% decrease, then 66% with further integrations*

Overtime per two week pay period

UPMC Mercy

UPMC St. Margaret**

UPMC Passavant

Estimated annual savings of $195,000

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Actus Impact - Accuracy

Coder Accuracy
Compare coder results to review by DRG Specialist
July 2009 – Dec 2009

% Agreement

100
95
90
85
80
75

Mercy
Magee
CAC (PUH/SHY)

Hospital

AHIMA Convention & Exhibit 2010 ORLANDO SEPTEMBER 23-30, 2010

OPTUM
Actus Impact - CMI

Medicare CMI improves by 0.19 (8%) Estimated impact - $950 per Medicare case Medicare CMI pre and post CAC

June 2008 (Avg FY 2008) through May 2010

Full Implementation
Partial Implementation
Obstacles on the Path to CAC

- What are the obstacles to obtaining CAC solutions?
  - Budget
  - Other project prioritization
  - Unclear objectives
  - ROI justification
- Who are the gatekeepers you must work with to promote a CAC solution?
  - I.T. Resources
  - CFO
  - CIO
  - Vendors
  - Others?
CAC Challenges

- For most organizations, this is the first time they are evaluating CAC and NLP technology.
- Identify best resources inside the organization to discern between NLP technologies that are enablers to CAC success, and those that fall short.
- Put together a selection process that focuses on key goals of the organization.
- This helps prevent becoming enamored with a particular feature/function.
- Establish your key selection criteria to help you achieve the goals you have set forth for CAC.
CAC Challenges - continued

- HIM Directors need to plan how to communicate to their coding staff that:

  - Computer-Assisted Coding (CAC):
    - Is changing the role of coders.
    - Will not replace coders but will be a tool to help improve their productivity, accuracy, and quality
    - Will still require coders to review all handwritten documents in the record
    - Will tremendously support them with ICD-10!

- Coder’s role in CAC is critical to its success
  - Ultimate responsibility to validate and accept codes recommended by NLP
  - Crucial to the auditing of each case before finalizing coding prior to billing
CAC Challenges - continued

- Fear of change….Coders have been using the encoder forever.
- Coders are accustomed to a process where they read the entire chart, and then code from the chart using the encoder.
- CAC codes the chart from the electronic text, so typically use encoder less.
- Transition from coder to coder/auditor.
- Coders concerned about their jobs
- HIM Directors facing challenges with obstacles and gatekeepers to push project forward
Evaluating CAC - Why is it intimidating?

- Not all technologies are equal!

- Some CAC solutions are highly automated, and some are more coding assist or workflow

- Current vendors marketing CAC have experience ranging from less than 1 year to 12 years, and from a few to nearly 1,000 client sites.

- Difficult to evaluate NLP technologies because NLP is “behind the scenes” technology
Evaluating CAC - Why is it intimidating? - continued

• Return on Investment models are limited for hospital based computer assisted coding with current adoption level.

• Information Systems Technology resources to provide integration.

• Some technologies may actually increase coder coding time.

• Some NLP/CAC technologies may not stand the test of time.
Considerations as You Embark on CAC Selection

- Why are you looking at CAC?
- What technology is behind the CAC solution?
- What is the process to add one code to the NLP engine?
- What is the most important criteria for your consideration?
- How can you learn about the vendor’s NLP technology?
- What are the key selection criteria?
- What resources are required to install each vendor’s NLP technology?
Conclusion

- NLP – Technology behind CAC
- Physician applications
  - In the market for over 10 years
  - Very successful in specialty areas – radiology, emergency medicine, pathology, cardiology
  - Primarily used to support billing process
- Hospital applications
  - Growing rapidly as ICD-10 nears
  - Requires integration with HIM workflow
  - Requires robust handling of multiple document types and medical specialties
Where to Learn More

• Journal of AHIMA & Online Resources
  – Automated Coding Workflow and CAC Practice Guidance (AHIMA Practice Brief), *Journal of AHIMA* 81, no.7 (July 2010).
  – CAC Summit, 2010 and 2011
  – CAC Software Standards Workshops, 2006 and 2007
  – Delving into Computer-assisted Coding (AHIMA Practice Brief), *Journal of AHIMA* 75, no.10 (Nov-Dec 2004).

• HHS Report
  – Automated Coding Software: Development and Use to Enhance Anti-Fraud Activities, Department of Health and Human Services, Office of the National Coordinator for Health Information Technology, July 11, 2005.
Questions?
Thank You.

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