Crystal Ball for Coding

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by Merida Johns, PhD, RHIA

What will the future of coding look like? A special AHIMA task force has several ideas. What will really happen depends on how coders choose to respond. Here's an overview of the task force's findings, plus suggestions on how readers can make the most of possible career opportunities.

It's 2010 and a brave new world for coders.

Jane Smith, RHIT, CCS, is a health information technician and clinical coder who is now employed in the clinical nosology, or classification, department of Community Health System. Jane recognized some time ago that coding would become more and more automated in the future and that she could get a better job if she had a deeper understanding and broader knowledge of lexical technologies and medical vocabularies. She continued her education and landed an enviable and challenging position. Now she works with colleagues who have backgrounds in health information management, medical and nursing informatics, clincial sciences, computer science, and statistics.

Jane's nosology group works on various projects associated with merging and mapping overlapping clinical vocabularies to support development of the computer-based patient record, automated decision support, and outcomes analysis. With more than 25 different medical vocabularies in use in the system, overlapping terms are a tremendous problem—resulting in duplication and difficulty in translation and retrieval of data for patient care, research, and decision support.

The nosology group's current project involves comparing the output of two systems that use different approaches in merging and mapping clinical vocabularies. The group wants to evaluate how well these two systems can initially map terms from two selected vocabularies—LOINC and SNOMED. Jane's team wants to determine which of the two systems does a better job in merging the two clinical vocabularies. Jane, whose job title is now clinical nosologist, developed the initial research plan for the comparison. In preparation for the analysis, she reviewed system options and selected the best possible systems for the test.

When the team has finished its testing, it will be able to recommend whether the health system should purchase either of the two systems and incorporate it into the enterprise-wide clinical computing system. The result, ideally, will be more reliable, consistent, and accurate data for automated decision support systems and clinical information systems.

Like Jane's job, the health information industry is very different than what it was 10 years ago. Fast-moving technology has fed development of a complex web of players, from investors to healthcare teams and forward-thinking organizations who have anticipated technological breakthroughs and accordingly reengineered to capitalize on them.

A convergence of technology breakthroughs has made code assignments for patient care, billing, and research purposes essentially automatic. Coding specialists are still important, but rather than assign codes, they now analyze coded data for quality control and trends and maintain data mappings from vocabularies to classification systems.

A Realistic Snapshot of the Future?

Is this a realistic snapshot of the future? Probably, according to a report just completed by the AHIMA Coding Futures Task Force. This group was convened by AHIMA's Board of Directors to study how the melding of several dominant forces in the area of medical vocabularies and enabling technologies might affect the domain of coding practice. Composed of nationally recognized authorities in the development of medical vocabularies, standards development, and use of coded data, the task force (click here to view) looked beyond current frames of reference to illuminate what the future will likely hold.

The task force evaluated the effect of the convergence of three forces on coding:

- the evolution and growth of medical vocabularies
- the development and application of information and enabling technologies for coded data
- the emergence of the information economy

To assess the combined effects of these forces, the group used a process called "scenario planning"—creating stories about the future based on environmental variables.

The results are a provocative collection of scenarios about the future of the coding industry—forecasting changes in the way HIM professionals will work with data, technology, standards, and patients. The group also developed recommendations for the best actions for HIM professionals and AHIMA to take in the future—so that the profession benefits no matter which scenario proves to be true.

Looking into the Crystal Ball

The task force's "crystal ball" yielded four scenarios, developed around the key factors of technology, management, the regulatory environment, and consumer awareness.

Rapid Technology Change

This scenario is dominated by rapid technology change, better technology infrastructure, and development of a true computer-based patient record. In this scenario, forward-thinking organizations anticipate technological breakthroughs and accordingly reengineer to capitalize on them. Professional organizations feel the aftershocks of technological change as well, and some reel in uncertainty because they did not anticipate, shape, and stake their positions earlier.

Standards Development

The second scenario is dominated by standards development and implementation—a "virtual" approach to data management. Organizations that cling to inefficient practices and have not developed methods for data and knowledge management are left behind. Similarly, professions that have not transformed themselves and are overly invested in old conceptual frames of reference are suffering.

Cost-driven Environment

In the third scenario, cost drives the healthcare industry. Financial, consumer, and professional interests will clash over new cost-efficient delivery models, and there will be little or no room for negotiation with payers and regulators. Algorithmic technologies for interpretation of coded data will support both best practices and compliance with fraud and abuse regulations. Failure to deploy such technology will sound alarms. For all parties, hindsight will reveal that misplaced and misordered priorities resulted in costly mistakes.

Demand for Information and Quality

In the final scenario, demand for better information and better quality of life predominates. Healthcare will track with the rules of microeconomics and yield to the preferences and purchasing decisions of millions of people. In this era, what originally was a fiduciary relationship between doctors and patients now looks and feels more like a relationship between suppliers and customers at multiple levels. Only organizations that listen, hear, and respond to their customers' collective voice will survive in this milieu.

Be Prepared

What do these scenarios tell us about the future of coding practice? In a sense, they offer a mixed bag. On one hand, the convergence of forces and major trends in technology, medical vocabularies, and the information economy offers many new opportunities for HIM professionals who specialize in coding.

But these opportunities will only be available to those who are prepared to develop and assess technology at deeper levels than they currently do. Those who wish to take advantage of the opportunities will need to develop new skills, especially in areas of formalization such as the development of algorithmic translation, concept representation, and mapping among clinical nomenclatures and reimbursement methods.

In the future, according to the task force, thanks to the development of enabling technologies, automatic coding systems, and the maturity of natural language processing, the critical shortage of individuals to assign diagnostic and procedural codes will all but disappear. Instead, there will be an acute urgency for leadership in the creation, maintenance, and oversight of the vocabulary mapping process. There will be a need for individuals to monitor the output of these processes and to ensure overall data quality. There will also be a need for individuals who have the knowledge and skills to position themselves as authorities on the cutting edge of healthcare nosology.

Ultimately, the task force's findings show that the profession must define itself in an open-ended way to take full advantage of opportunities in the electronic world. First and foremost, according to the task force, HIM professionals who specialize in coding must define themselves as information managers with a focus on data as opposed to records. They should position themselves as visible change agents in coded data activities and in furthering new methods of concept representation, extraction, and use of clinical data.

In the near future, coders will need to be educationally prepared to go beyond assignment of diagnostic and procedural codes. With implementation of advanced technologies, code assignment will be largely automatic. They also must be trained and retrained in coding formalization principles broader than ICD and CPT. Skills and knowledge in the creation, development, and research validation of new coding systems will be the premium competencies the marketplace seeks.

Unveiling a New Trajectory of Practice

Having analyzed the possible scenarios, the task force offered some insights about factors that will have direct and lasting impact on HIM professionals who specialize in coding. The most fundamental insight is that merging external forces are producing a new trajectory for HIM practice. This "trajectory" is a way of describing a fundamental change from a records management to a data management focus. The trajectory depends on a number of corresponding critical initiatives.

Here are some of the ways the task force believes the trajectory of practice would affect numerous parts of the coding picture:

The new growth trajectory for practice requires innovative methods of professional development training and retraining. The evolution of HIM practice is producing a critical need for new training (and retraining) of HIM professionals who carry out coding functions. At each level of practice, new tasks along the growth trajectory must be identified, and opportunities for "special skills" training must be developed for newly and rapidly evolving roles. Coders must be prepared to develop and assess technology at deeper levels than they currently do, especially in areas of data security, data structures, system implementation, data integrity, process flow, information modeling, and concept representation.

Certification title change. As the trajectory continues to move away from records management, current certification titles must change to reflect the movement toward data and information management. The 1999 House of Delegates recently approved new credential titles of Registered Health Information Administrator (RHIA) and Registered Health Information Technician (RHIT), which replace the RRA and ART. With this step, the profession is already recognizing the new trajectory of practice.

The convergence of forces has created a need for leadership in standards development. To be a valued and competitive player in new roles, HIM professionals who specialize in coding must expand participation in standards and vocabulary groups. The merging of external forces will create new roles, but these roles will require a broader and deeper knowledge in areas of information modeling and concept representation. HIM professionals must be actively involved in this process and also must contribute to the development of nomenclatures.

The current environment has created a phenomenal opportunity for leadership in compliance activities and ethical leadership. Coding professionals should take advantage of opportunities created by the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and compliance programs. Ethical practices and the integrity of patient and coded data are major areas of future practice that should be aggressively pursued.

The convergence of external forces has created an opportunity for leadership in the creation, maintenance, and oversight of the vocabulary mapping process. Coders should be educationally prepared to go well beyond assigning diagnostic and procedural codes. In the future, leadership in the creation, maintenance, and oversight of the vocabulary mapping process will be critical. For example, HIM professionals who specialize in coding should be leading enterprise efforts to design and implement systems that provide a set of non-overlapping controlled vocabularies that together cover the concepts need to document patient problems and process of care.

Taking the Lead: Capitalizing on Opportunities

Data management has traditionally been an information systems function, so HIM professionals who specialize in coding must emphasize their unique contributions to this area if they are to maintain and create new value in the marketplace. How can they do this? Capitalizing on current and future opportunity requires:

- special skills training and retraining in newly and rapidly evolving roles
- long-term strategy for credential management that reflects a general core of competency complemented with sub-specializations
- expanded leadership and volunteer activity in standards and classification systems development and oversight of vocabulary mapping processes
- transformational organizational change that make AHIMA's organizational structure and its component parts sufficiently nimble to provide new services and products ahead of the curve

Coding specialists can prepare to capitalize on these opportunities by applying lifelong learning strategies and updating their knowledge and skills in technology application and healthcare vocabularies. Some specific informal learning tactics include:

- keep current on technology and vocabulary issues such as those covered in the *Journal of AHIMA*. A good start is to review the May 1998, July-August 1999, and September 1999 issues, as well as the current issue
- expand your knowledge of medical vocabularies beyond ICD and CPT. Become knowledgeable about the content, construction, use, and development of healthcare vocabularies. More than 30 vocabularies are currently contained in the National Library of Medicine's UMLS Metathesaurus
- widen your reading horizons. The *Journal of the American Health Informatics Association*, *Proceedings of the American Medical Informatics Association*, *Nursing Informatics*, and *Methods of Information in Medicine* are also key sources for up-to-date information (a partial reading list can be found at the end of this article, or click here)
- make a point of attending conferences and symposia focusing on medical vocabulary issues
- visit the National Library of Medicine Web site (http://www.nlm.nih.gov/) and investigate issues relating to development of the Unified Medical Language System
- update your knowledge and skill through reading books devoted to topics related to nosology, technology, and healthcare vocabularies
- participate in national and international vocabulary standards groups

No one knows what scenario will "come true" in 2010 or the following years. But one thing is clear—for HIM professionals who specialize in coding, the future will be very different from the present. Those who will succeed are those who are

prepared—and the time for preparation is now.

AHIMA's Coding Futures Task Force

These national experts in medical vocabularies and coded data served on AHIMA's Coding Futures Task Force:

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A Vocabulary Reading List

As vocabulary and terminology issues gain increasing importance, coding specialists would do well to broaden their knowledge of them, as the Coding Futures Task Force report suggests. Here's a partial list of some recently published articles on this topic. *Journal of AHIMA* articles that are available in full at AHIMA's Web site contain links to the articles.

"Alternative Medicine Gets Coding Reference." *ADVANCE for Health Information Professionals* 9, no. 17 (1999): 33.

Beinborn, Julie. "Automated Coding: The Next Step?" *Journal of AHIMA* 70, no. 7 (1999). Available at AHIMA's Web site.

Bertelsen, A. " Reflections on the Clinical Utility of the ICD-10 and DSM-IV Classifications and their Diagnostic Criteria." *Australian and New Zealand Journal of Psychiatry* 33, no. 2 (1999): 166-73

Britt, H., S. Scahill, and G. Miller. "ICPC PLUS for Community Health? A Feasibility Study." *Health Information Management* 27, no. 4 (1997-1998): 171-5.

Brown, E.G., L. Wood, and S. Wood. "The Medical Dictionary for Regulatory Activities (MedDRA)." *Drug Safety* 20, no. 2 (1999): 109-17.

Bulechek, G.M., and J.C. McCloskey. "Nursing Interventions Classification (NIC)." MEDINFO 8, pt. 2 (1995): 1368.

Button, Patricia et al. "Challenges and Issues Related to Implementation of Nursing Vocabularies in Computer-based Systems." *Journal of the American Medical Informatics Association* 5, no. 4 (1998): 332-334.

Campbell, Keith E. et al. "Representing Thoughts, Words, and Things in the UMLS." *Journal of the American Medical Informatics Association* 5, no. 5 (1998): 421-431.

Campbell, Keith E. et al. "The Unified Medical Language System: Toward a Collaborative Approach for Solving Terminologic Problems." *Journal of the American Medical Informatics Association* 5, no. 1 (1998):12-16.

Chute, Christopher G. et al. "A Clinical Terminology In the Post Modern Era: Pragmatic Problem List Development." *Proceedings of AMIA Symposium.* Philadelphia: Hanley & Belfus, 1998, pp. 795-9.

Chute, Christopher G. et al. "The Content Coverage Of Clinical Classifications." *Journal of the American Medical Informatics Association* 3, no. 3 (1996): 224-33.

Chute, Christopher G. et al. "A Framework for Comprehensive Health Terminology Systems in the United States: Development Guidelines, Criteria for Selection, and Public Policy Implications." *Journal of the American Medical Informatics Association* 5, no. 6 (1998): 503-510.

Flier, F.J., and W.M. Hirs. "The Challenge of an International Classification if Procedures in Medicine." MEDINFO 8 pt. 1 (1995): 121-5.

Gu, Huanying et al. "Benefits of an Object-oriented Database Representation for Controlled Medical Terminologies." *Journal of the American Medical Informatics Association* 6, no. 4 (1999): 283-303.

Hardiker, Nicholas R., and Alan L. Rector. "Modeling Nursing Terminology Using the GRAIL Representation Language." *Journal of the American Medical Informatics Association* 5, no. 1 (1998): 120-128.

Harding, Ann, and Charlie Stuart-Buttle. "The Development and Role of the Read Codes." *Journal of AHIMA* 69, no. 5 (1998).

Henry, Suzanne Bakken, and Charles N. Mead. "Nursing Classification Systems: Necessary but Not Sufficient for Representing 'What Nurses Do' for Inclusion in Computer-based Patient Record Systems." *Journal of the American Medical Informatics Association* 4, no. 3 (1997): 222-232.

Henry, Suzanne Bakken, Judith J. Warren, and Rita D. Zielstorff. "Nursing Data, Classification Systems, and Quality Indicators: What Every HIM Professional Needs to Know." *Journal of AHIMA* 69, no. 5 (1998).

Henry, Suzanne Bakken. "Overview Framework of Healthcare Terminology". *1998 AHIMA National Convention Proceedings.* Chicago: AHIMA, 1998, pp. 95-118.

Henry, Suzanne Bakken et al. "A Review of Major Nursing Vocabularies and the Extent to Which They Have the Characteristics Required for Implementation in Computer-based Systems." *Journal of the American Medical Informatics Association* 5, no. 4 (1998): 321-328.

Henry, Suzanne Bakken, J.A. Morris, and W.L. Holzemer. "Using Structured Text And Templates to Capture Health Status Outcomes in the Electronic Health Record." *Joint Commission on Journal Quality Improvement* 23, no. 12 (1997): 667-77.

Huff, Stanley M. et al. "Development of the Logical Observation Identifier Names and Codes (LOINC) Vocabulary." *Journal of the American Medical Informatics Association*, 5 no. 3 (1998): 276-292.

Humphreys, Betsy L. "Do Existing Controlled Vocabularies Contain Terminology Needed for Patient Records?" *Journal of AHIMA* 69, no. 5 (1998).

Humphreys, Betsy L., Alexa T. McCray, May L. Cheh. "Evaluating the Coverage of Controlled Health Data Terminologies: Report on the Results of the NLM/AHCPR Large Scale Vocabulary Test." *Journal of the American Medical Informatics Association* 4 no. 6 (1997): 484-500.

Jefferson, T.O., V. Demicheli, and A.H. Macmillan. "Pilot Study of the Introduction Of the J95 Health Data Collection System." *Journal of the Royal Army Medical Corps* 142, no. 1 (1996): 25-29.

Johnson, Stephen B. "A Semantic Lexicon for Medical Language Processing." *Journal of the American Medical Informatics Association* 6, no. 3 (1999) 205-218.

Kudla, Karen, and Marjorie Rallins. "SNOMED: A Controlled Vocabulary for Computer-based Patient Records." *Journal of AHIMA* 69, no. 5 (1998).

Lovis, C. et al. "Medical Dictionaries for Patient Encoding Systems: A Methodology." *Artificial Intelligence in Medicine* 14, no. 1-2 (1998): 201-14.

Patel, Vimla L. et al. "Representing Clinical Guidelines in GLIF: Individual and Collaborative Expertise." *Journal of the American Medical Informatics Association* 5, no. 5 (1998): 467-483.

Poon, Alex D., Lawrence M. Fagan, and Edward H. Shortliffe. "The PEN-Ivory Project: Exploring User-interface Design for the Selection of Items from Large Controlled Vocabularies of Medicine." *Journal of the American Medical Informatics Association* 3, no. 2 (1996): 168-183.

Price, C., and J. Barrett. "Clinical Terms Quality Assurance." *British Journal of Healthcare Computing and Information Management* 16, no. 2 (1999): 44, 46, 48.

Rector, A.L. "Thesauri and Formal Classifications: Terminologies for People and Machines." *Methods of Information in Medicine* 37, no. 4-5 (1998): 501-9.

Robinson, David et al. "Updating the Read Codes: User-interactive Maintenance of a Dynamic Clinical Vocabulary." *Journal of the American Medical Informatics Association* 4, no. 6 (1997): 465-472.

Rogers, J.E. et al. "Validating Clinical Terminology Structures: Integration and Cross-Validation of Read Thesaurus And GALEN." *Proceedings of AMIA Symposium.* Philadelphia: Hanley & Belfus, 1998, pp. 845-9.

Schriner, M.W. "Coming to Terms. The Key to Standardizing Clinical Vocabulary Is to Build On What's Already Been Done." *Healthcare Informatics* 15, no. 3 (1998): 70-4, 76, 78.

Schulz, Erich B., James W. Barrett, and Colin Price. "Read Code Quality Assurance: From Simple Syntax to Semantic Stability." *Journal of the American Medical Informatics Association* 5, no. 4 (1998): 337-346.

Schulz, Erich B., Colin Price, and Philip J.B. Brown. "Symbolic Anatomic Knowledge Representation in the Read Codes Version 3: Structure and Applications." *Journal of the American Medical Informatics Association* 4, no. 1 (1998): 38-48.

Shakir, Abdul-Malik. "Tools for Defining Data." *Journal of AHIMA* 70, no. 8 (1999)

Smith, N., Wilson A., and Weekes, T. "Use of Read Codes in Development of a Standard Data Set." B*ritish Medical Journal* 311, no. 7000 (1995): 313-316.

van Drimmelen-Krabbe, J.J., et al. "The Application of the International Statistical Classification of Diseases to Neurology: ICD-10 NA." *Journal of Neurological Sciences* 161, no. 1 (1998): 2-9.

Vez, J.P., J.P. Vader, and F. Paccaud. "Cross-coding from the Swiss Disability Insurance Listing to the ICIDH." *Disability and Rehabilitation* 17 no. 7 (1995): 369-76.

Warren, Judith J., and Amy Coenen. "International Classification for Nursing Practice (ICNP): Most Frequently Asked Questions." *Journal of the American Medical Informatics Association* 5, no. 4 (1998): 335-336.

Warren, Judith, Marcelline Harris, and Edward Warren. "Mining the CPR (and Striking Research Gold)." *Journal of AHIMA* 70 no. 7 (1999).

White, Mark D., Linda M. Kolar, and Steven J. Steindel. "Evaluation of Vocabularies for Electronic Laboratory Reporting to Public Health Agencies." *Journal of the American Medical Informatics Association* 6, no. 3 (1999): 185-194.

Terms to Know

Algorithmic translation—involves the use of algorithms to translate and/or map clinical nomenclatures among each other or map natural language to a clinical nomenclature or vice versa.

Concept representation—a methodology that has been used in the construction of the Unified Medical Language System (UMLS) developed by the National Library of Medicine.

Controlled vocabulary—a vocabulary used by a particular automated system.

Lexical technologies—technologies for mapping information to and from natural language representations to enable efficient and intelligent handling of natural language text in critical phase of document processing such as recognition, summarization, and indexing.

Nosology—a branch of medical science that deals with classification issues

Semantic network—a collection of basic concepts together with a set of valid relationships or links among the concepts. UMLS

Metathesaurus—continually evolving repository of information about biomedical terminology.

Unified Medical Language System (UMLS)—An initiative of the National Library of Medicine designed to provide uniform access to computer-based resources in biomedicine, including bibliographic databases, factual databanks, databases of clinical records, and medical knowledge bases.

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