

## Background

Recent national policy initiatives, such as the Health Information Technology for Economic and Clinical Health Act (HITECH) and the American Recovery and Reinvestment Act (ARRA) of 2009, hold the promise of improving patient outcomes,<sup>1</sup> as well as presenting unprecedented opportunities for healthcare information providers. However, despite advances in health information technology (HIT), the need remains for fully integrated systems that incorporate evidence-based clinical decision support (CDS) and performance measures in a manner conducive to full adoption by healthcare providers.<sup>2-4</sup>

Although this task would appear to fall within the purview of healthcare information companies, few such companies have the full spectrum of content resources immediately available to meet this need and realize the potential benefits. In many cases, alliance with a content excellence partner—one that already possesses the requisite knowledge, skills, and abilities (KSAs)—can provide the strategic solution. Content excellence is not achieved by default; rather, it is the result of logical and disciplined application of expertise in content, workflow process, and technological tools. This white paper examines the components necessary for achieving content competency.

## Content Expertise

The greatest challenge in the area of developing and disseminating clinically useful content is, paradoxically, the vast and continuously growing amount of biomedical literature available.<sup>5</sup> In addition to journal articles, both the number and importance of performance measures continue to increase, including those promulgated by the Physician Quality Reporting Initiative,<sup>6</sup> the National Quality Forum,<sup>7</sup> and the National Committee for Quality Assurance, developer of the Health Plan Employer Data & Information Set (HEDIS).<sup>8</sup> Now that physicians and healthcare institutions have financial incentives for adopting performance measures,<sup>9</sup> there is greater urgency to incorporate them rapidly and accurately into CDS content. Transforming this mass of data into clinically useful content requires careful assessment, selection, and adaptation for specific audiences and care environments by qualified medical professionals, pharmacologists, and informaticists.

The foundation for content competency is medical expertise, both within the organization's leadership and through a network of specialty subject matter experts:

- **Medical Lead:** Qualified medical professionals should be part of the organization's management; in particular, the medical lead should possess a deep understanding of evidence-based medicine, editorial experience in peer-reviewed journals, and effective communication and project management skills. Among the medical lead's essential tasks is selecting the appropriate subject matter experts for particular projects and guiding them through a rigorous review process.
- **Subject Matter Experts:** Augmenting the medical lead is a large external network of qualified and trained physicians representing the range of medical specialties. (For example, newMentor maintains a network of 600 subject matter experts.) These experts, selected through a systematic methodology, are board certified, have academic affiliations, and are in clinical practice. All are thoroughly conversant with the literature in their fields and, moreover, have contributed extensively to it. Their function is analogous to an external editorial board in providing expert review and opinion.

Content competency is also enhanced by specific KSAs in pharmacology and informatics:

- Pharmacologists: Drug information is often the most important data in healthcare information projects and is the area with the greatest potential for harm. Thus, dosage validation by a pharmacologist (doctor of pharmacology) is a critical quality assurance step for content excellence.
- Medical Informaticists: With expertise in both medicine and electronic technology, informaticists are essential in translating raw data into customized, highly usable, computable information. They bring deep knowledge of medical data sets, controlled vocabularies, and evidence ranking into the process of content creation.

## Process Expertise

Process expertise encompasses editorial and product design, development and application of style guides, quality control, and workflow analysis and improvement. True process expertise requires both a thorough knowledge of the rules and the agility to individualize them for specific clients and healthcare environments.

### Editorial and Product Design

The most effective project conceptualization begins with a clear vision of the desired end in mind. Working backward from that end point will identify the critical resources needed for and constraints inherent in the particular project. Often, however, a needs assessment exercise guided by the content excellence partner is required to help the client clarify the project specifications.

### Style Guides

Too often, a style guide is considered to be merely a compilation of rules governing the use of punctuation, abbreviations, formatting, and other mechanical aspects of writing. Although these elements are necessary, they are only the beginning: at a higher level, the style guide should document the what, the why, and the how of a particular project. It should define the audience, formalize the standards and scope for content creation, and establish what data elements are required. Although creating a customized style guide is a resource-intensive process, a current and comprehensive style guide is a fundamental tool for ensuring the repeatability of good editorial practices.

A well-designed, project-specific style guide forms the basis for literature inclusion and exclusion limits. As noted earlier, a staggering amount of scientific material is being produced; by one account, approximately 2 million scholarly articles are published each year in 20,000 biomedical journals.<sup>5</sup> Honing this mass down to those articles that have the greatest value for specific clients requires the combination of human expertise, automation, and analytics. Carefully defined literature inclusion and exclusion criteria are essential in focusing and optimizing the efforts of medical writers and subject matter experts; moreover, such limits help manage literature acquisition costs.

### Quality Control

Quality assurance is accomplished through a methodical and disciplined workflow that enables effective collaboration among project team members. It incorporates multiple review cycles, a series of checks and balances, and purposeful redundancy to ensure the integrity of data. In addition to the medical lead and subject matter experts introduced earlier, medical writers, medical editors, copyeditors, and the editor-in-chief contribute their specific KSAs to the quality assurance process.

## Workflow Analysis and Design

The best editorial policies have little value unless they are integrated into a comprehensive content creation and delivery workflow. It must be emphasized that, although based on consistent principles, the workflow is customized according to project scope and client requirements. It is crucial that the processes can be merged seamlessly with the client's own systems, schedules, and products.

Building on content competency requires continuously seeking opportunities for process improvement. Rather than assuming that the defined process will always be the best fit, the content excellence partner remains alert to possibilities for greater efficiencies on the path from project conceptualization to full deployment. Moreover, circumstances occasionally require reconfiguring the process once a project is under way. Although such situations can be minimized by clear project definition and communication prior to project initiation, when they do occur, they can be successfully managed through careful assessment and retooling, supported by explicit variance process documentation.

## Tools

Several tools can be wielded in the creation of content competency:

- Content Management System: A content management system (CMS) allows for the storage, revision, and versioning of semantically enriched information. Controlling information in this manner creates significant efficiencies and facilitates interoperability. Such functionality dramatically decreases the potential for data corruption and internally inconsistent content. A major challenge associated with CMS technology is expense, including direct costs of capital expense and maintenance, as well as indirect costs, including staffing required for data normalization and data migration.
- Controlled Vocabularies: The use of controlled vocabularies is a technique that enables metadata tagging. Storing such tagged content in a data repository and accessing it through a CMS are essential to the internal consistency of large documents. They also create efficiencies by minimizing the amount of single-use, redundant content creation.
- Coding: The use of medical classification, or coding, promotes interoperability between content and electronic medical records or HIT systems and facilitates compliance, performance improvement, and reimbursement for healthcare providers. Examples of commonly used coding schemes include the Systematized Nomenclature of Medicine–Clinical Terms (SNOMED CT),<sup>10</sup> Logical Observation Identifiers Names and Codes (LOINC),<sup>11</sup> International Classification of Diseases (ICD), and Current Procedural Terminology (CPT).<sup>12</sup> Incorporating coding tools into content development requires adequate initial and ongoing informatics support, particularly because all of these systems continually become larger and more complex. For example, the overall term content in the upcoming ICD-10-CM is expected to be seven times larger than the current ICD-9-CM.<sup>13</sup>
- Analytics: Analytic tools include bibliometrics, a set of independently validated library science techniques that are used to assess primary literature through citation analysis and impact factors. Evidence-based medicine ranking techniques allow systematic evaluation of levels of evidence and strength of recommendations.

## Product Strategy and Marketing Expertise

Strong product strategy and marketing expertise informs every step in content creation and aligns the development process with the client's business goals. The content excellence partner brings value to the client relationship in several ways: first, through a deep understanding of end user needs; second, through a detailed knowledge of the type of content required and when and where it is to be deployed; and third, through a complete mastery of the available technological means of delivering the content.

In addition, the content excellence partner must be well grounded in the current state of the art and competitive landscape in order to provide accurate product benchmarking, while also offering a vision of what future products can be. Finally, content competency requires an acute awareness of the many factors that have potential impact on the client's success, including the constantly changing regulatory environment, trends in patient care, and developments in health information technology.

## Conclusions

As outlined above, achieving content competency requires a large and complex array of expertise, tools, and processes. Developing a staff that possesses the appropriate KSAs, building and maintaining a large physician network of subject matter experts, and implementing the necessary technological tools require significant investment of time and resources. Few healthcare information provider companies presently have the complete array immediately available, and they may choose to streamline their operations by partnering with a content excellence partner that already has all of the components in place and fully operational.

It is not enough to have thorough knowledge of the rules and tools; content competency also requires agility and innovation to deploy them wisely in developing client-specific applications, as well as an unwavering commitment to quality in every step of the path from concept through execution. Ultimately, the core characteristic of content competency is the ability to transform the vast resources of medical literature and evidence-based guidelines into customized, manageable healthcare information solutions through rigorous application of subject matter expertise, editorial processes, and technology.

## References

1. U.S. Department of Health and Human Services. Office of the National Coordinator for Health Information Technology. ONC initiatives. Updated February 12, 2010.  
[http://healthit.hhs.gov/portal/server.pt/community/healthit\\_hhs\\_gov\\_\\_onc\\_initiatives/1497Acc](http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__onc_initiatives/1497Acc). Accessed November 11, 2010.
2. Jha AK. Meaningful use of electronic health records: the road ahead. *JAMA*. 2010;304(15):1709-1710.
3. Lyman JA, Cohn WF, Bloomrosen M, Detmer DE. Clinical decision support: progress and opportunities. *J Am Med Inform Assoc*. 2010;17:487-492.
4. Bloomrosen M, Detmer DE. Informatics, evidence-based care, and research: implications for national policy: a report of an American Medical Informatics Association health policy conference. *J Am Med Inform Assoc*. 2010;17:115-123.
5. Jinha AE. Article 50 million: an estimate of the number of scholarly articles in existence. *Learned Publishing*. 2010;23:258-263.
6. U.S. Department of Health and Human Services. Centers for Medicare & Medicaid Services. Overview: Physician Quality Reporting Initiative (PQRI). Updated June 9, 2010. <https://www.cms.gov/pqri/>. Accessed November 11, 2010.
7. National Quality Foundation. Measuring performances: NQF-endorsed measures.2010.  
[http://www.qualityforum.org/Measures\\_List.aspx](http://www.qualityforum.org/Measures_List.aspx). Accessed November 11, 2010.
8. National Committee for Quality Assurance. HEDIS and quality measurement. 2010.  
<http://www.ncqa.org/tabid/59/default.aspx>. Accessed November 11, 2010.
9. Blumenthal D. Stimulating the adoption of health information technology. *N Engl J Med*. 2009;360(15):1477-1479.
10. International Health Terminology Standards Development Organisation. SNOMED CT.  
<http://www.ihtsdo.org>. Accessed November 11, 2010.
11. The Regenstreif Institute, Inc. Logical Observation Identifiers Names and Codes. Updated June 30, 2010.  
<http://www.loinc.org>. Accessed November 11, 2010.
12. American Medical Association. CPT - Current Procedure Terminology. 2010.  
<http://www.ama-assn.org/ama/pub/physician-resources/solutions-managing-your-practice/coding-billing-insurance/cpt.shtml> Accessed November 11, 2010.
13. Steindel SJ. International Classification of Diseases, 10th edition, clinical modification and procedure coding system: descriptive overview of the next generation HIPAA code sets. *J Am Med Inform Assoc*. 2010;17:274-282.