

Standardizing Interoperability is a Team Effort

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By Lisa A. Eramo, MA

AHIMA and other key stakeholders continue to drive national and global progress to achieve information systems interoperability in healthcare.

Like a complex puzzle, health information data and system interoperability takes time, effort, and collaboration to solve. And solving this puzzle is critical. Without immediate access to health information during a patient's time of need, healthcare providers can't offer effective—or perhaps even life-saving—treatment.

To achieve interoperability between information systems in healthcare, clinicians, health information management (HIM) professionals, and health information technology (HIT) professionals must each share their perspectives, says Lynne Thomas Gordon, MBA, RHIA, CAE, FACHE, FAHIMA, chief executive officer at AHIMA. Uniting various efforts into a cohesive program allows information to be used effectively throughout its lifecycle, she says.

In 2015, AHIMA began a concerted effort to ensure that HIM practices are integrated into interoperability efforts. More specifically, AHIMA and Integrating the Healthcare Enterprise (IHE)—a partnership of HIT vendors and professional medical associations—worked together to publish “Health IT Standards for HIM Practices,” a first-of-its-kind white paper that serves as a guide to inform HIT standards developers and vendors about information management in healthcare.¹

The white paper also outlines how to align HIM practices with the capabilities of HIT products through standards adoption. More specifically, it unveiled a roadmap for the development of interoperability standards to support HIM practices using standards-based interoperable HIT products.

“This inaugural collaboration with IHE has produced a great resource for our industry, and we're excited to continue our work together,” said Gordon in an AHIMA press release announcing the white paper.

The issue of interoperability and the wide disconnect between health IT systems—which has immobilized much of the nation's potentially life-saving health data—is too big for one provider or healthcare entity to solve, experts say. Because of this, groups are starting to come together and rally behind health IT and interoperability standards that could finally solve the issue.

“Collaboration is critical. Interoperability is too important to patients and clinicians for the industry to be competing on it. We really need to work together to solve the challenges,” says Joyce Sensmeier, MS, RN-BC, CPHIMS, FHIMSS, FAAN, vice president of informatics at the Healthcare Information and Management Systems Society (HIMSS).

This includes ensuring that HIM professionals are at the decision-making table sharing their expertise related to information governance, privacy, security, and more, Sensmeier says. The emergence of value-based payment models will continue to drive industry-wide efforts to share information and achieve interoperability between health IT systems. That's because the providers with whom patients seek care may not be part of the same organization, nor may they share the same electronic health record (EHR) system.

“To show your value, you're going to need to have interoperability in place,” Sensmeier adds.

Coming to Terms with Interoperability

Interoperability between various health data repositories and HIT applications is absolutely necessary, yet there is still much progress to be made, says Anna Orlova, PhD, senior director for standards at AHIMA and member of the IHE International Board. “It feels like we are as far as ever from true pervasive health data exchange in the United States. We can't even agree on what interoperability means,” she says.

Mike Nusbaum, IHE and HIMSS board member and collaborator with AHIMA on standards, agrees, adding that there continue to be several different definitions of interoperability co-mingling in the HIT arena. And the definition is just the start of the issue. “The definitions simply help us get our arms around the problem,” he says.

AHIMA supports the definition of interoperability provided by Health Level Seven (HL7)—a standards development organization (SDO)—with the addition of the word “capture” as follows:²

Interoperability means the ability to capture, communicate, and exchange data accurately, effectively, securely, and consistently with different information technology systems, software applications, and networks in various settings, and exchange data such that clinical or operational purpose and meaning of the data are preserved and unaltered.

HL7’s approach to interoperability is based on the following three interoperability components:

1. Semantic interoperability—shared content
2. Technical interoperability—shared information exchange infrastructure
3. Functional interoperability—shared rules of information exchanges (i.e., business rules and information governance)

These interoperability components serve as a basis for the Nationwide Interoperability Framework and any supporting infrastructure necessary to enable data, information, and knowledge generation, sharing, and utilization, Orlova says.

In fact, this three-component approach also serves as a basis for the Interoperability Framework adopted by the European Union and the International Organization for Standardization’s Technical Committee 215 Health Informatics (ISO/TC215).

“Standards are central to interoperability,” Orlova says. “Individual standards that various SDOs have developed over the last three decades must now work together.”

AHIMA has worked side-by-side with many national and international SDOs as well as other professional associations for a common goal of driving a completely interoperable healthcare network both within and outside of the United States, providing users with quality information when and where they need it. But bringing together and harmonizing all of the different standards to achieve interoperability is a huge task.

Bringing Standards Together

Many SDOs continue to develop HIT standards for information capture and sharing. But not much effort has been put forward to enable information use.

According to a 2015 report from the National Institute of Standards and Technology (NIST), current health IT limitations include a lack of information availability, inadequate documentation, and inaccurate and irretrievable information.³

A 2016 *Journal of the American Medical Association* article examines these limitations, saying “In this world of patient portals and electronic tablets, it should be possible to collect from individuals key information about their environment and unique stressors—at home or in the workplace—in the medical record... But the evolution of EHRs has not kept pace with technology widely used to track, synthesize, and visualize information in many other domains of modern life.”⁴

Despite these shortcomings, EHR interoperability continues to be a national priority. Since 2015, as part of its continued implementation of the US Nationwide Interoperability Roadmap, the Office of the National Coordinator for Health IT (ONC) has been publishing its Interoperability Standards Advisories. This annual document catalogs existing and emerging standards and specifications for specific interoperability needs (i.e., lab, medications, imaging, and more). In August, ONC released its draft 2017 Interoperability Standards Advisory for public comment.

“Now that we have these recommendations, vendors can go to this list and see what should be used,” Sensmeier says. “Provider organizations can also go to this list and say, ‘These are the standards that our systems should include.’”

Unfortunately, there is no mandate for EHR vendors to adhere to the ONC’s advisories. In addition, standards listed in the advisories have various levels of maturity, and there may be overlaps and gaps between these standards, Orlova says. Efforts

are needed to conduct comprehensive standards harmonization and subsequent testing of these standards to assess how the standards can work together to enable interoperability.

This means that EHR and other HIT vendors will continue to simply map their data between applications for information exchange, says Heather Grain, convener of the ISO/TC215 Health Informatics Workgroup 3: Semantic Content.

“Mapping is highly costly and a potentially high-risk strategy for information conversion over the life of a health record,” Grain says.

However, Nusbaum says certain domains such as clinical imaging have achieved greater interoperability because of their continuing efforts to select, harmonize, and test HIT standards for interoperability.

IHE—an AHIMA partner in developing HIT standards to support HIM practices—has begun to create specific guidance for the implementation of interoperable HIT standards. In collaboration with IHE, AHIMA’s Standards Task Force has been working to specify several use cases to ensure that information is captured, managed, stored, and presented in a way that is both usable and clinically relevant to end users such as clinicians, patients, public health professionals, researchers, and others.

For example, one use case might address a provider who wants to see all imaging tests (i.e., MRIs, CT scans, ultrasounds, X-rays, etc.) for a patient performed within a selected period of time regardless of where those tests took place. EHR vendors must implement many HIT standards to support this use case that includes ordering, scheduling, and conducting tests as well as reporting test results to the ordering physician, Sensmeier explains.

“The use cases say how to implement standards to enable the exchange of information and solve an interoperability problem,” Sensmeier says. Vendors and clinicians can then use these use cases to guide the development of the interoperability standards for interoperable HIT products, she adds.

“HIM practice standards must be applied to the information management practices in these clinical use cases,” emphasizes Orlova.

Defining Expectations, Taking a Holistic Approach

Despite popular belief, data capture is not the main goal of interoperability, Orlova says. “It’s about data viewing, use, and re-use. It’s about having the right information at the right time at the right place in the right format. Now the industry must take the interoperability journey further toward information usability,” Orlova says.

AHIMA is paving the way in doing this, Orlova says, adding that the association’s leadership in advancing healthcare interoperability efforts shouldn’t come as a surprise. Interoperability accomplishes AHIMA’s goal to ensure quality health information where and when it’s needed most. It also coincides with AHIMA’s official tagline: “Quality healthcare through quality information.”

In collaboration with the AHIMA Information Governance and Global Development Teams, the AHIMA Standards Task Force has been leading national and international efforts towards achieving information systems interoperability in healthcare through standardization of information technology and HIM practices.

“We specifically focus on the functional and semantics pillars of interoperability,” Orlova says.

Achieving Functional Interoperability

Functional interoperability addresses shared business rules of information exchange that are based on the following:

- Clinical guidelines
- Clinical pathways
- Federal and jurisdictional policies and regulations
- HIM best practices
- Standard operational procedures for information management in healthcare

Functional interoperability directly aligns with AHIMA's information governance goals of enabling end users to extract clinical and business value from healthcare information.

AHIMA has been leading the development of standards to support information management practices in healthcare at various SDOs, including IHE, HL7, and the ISO/TC215, to enable compatibility and interoperability between independent information systems and HIT applications.

Some of these efforts include the following:

1. Together with IHE, AHIMA subject matter experts (SME) are working to develop use cases that address the most significant interoperability challenges. Patient registration is one of the focus areas, Orlova says. SMEs identify a consistent approach for data collection, validation, and use in various patient registration scenarios (for example, patient presents in the emergency room, patient is admitted for a planned procedure, patient receives care prior to registration, etc.). "IHE really needs AHIMA at the table," Nusbaum says. "I've been advocating to dramatically increase the HIM subject matter expertise within IHE, and we've only recently just scratched the surface."
2. AHIMA participates in the development of privacy and security standards at ISO/TC215.
3. AHIMA is leading the development of functional standards at HL7 for EHR and personal health record (PHR) systems, including standards for the EHR and PHR systems functional models, record management and evidentiary support, and mobile health (mHealth) applications.

Achieving Semantic Interoperability

Semantic interoperability enables various HIT applications to interpret data and information correctly. This means that information can be shared across systems as it was originally intended and without changing its meaning. To accomplish this, semantic interoperability requires data standards (i.e., terminology standards) as well as information content standards (i.e., reference information models and case definition templates, among others).

"Where AHIMA shines is in semantic interoperability," Nusbaum says. "AHIMA professionals are most qualified to say, 'Does this language accurately reflect this diagnosis or procedure? Are we using the right words and codes? Is anything missing? What are the associated terms and data?'"

In the larger picture, semantic interoperability is paramount, Grain says. "Without semantic interoperability, you have the illusion of interoperability without any significant benefits over the current manual-based systems," she says.

Building from the foundation of the clinical documentation improvement (CDI) programs, AHIMA has led standardization of semantic content for interoperability in the following ways:

1. AHIMA collaborates with the Substance Abuse and Mental Health Services Administration (SAMHSA) in the Content Standardization Project to identify online content standardization tools for CDI specialists. These specialists can then use these tools to develop organization- and jurisdiction-specific case definition templates based on data and information content standards. In today's healthcare organizations that use EHR technology, clinicians and CDI professionals work together to define clinical workflow and dataflow in their EHR systems, Orlova says.

Clinical guidelines drive the development of organization-specific clinical pathways (i.e., clinical workflow), case definition templates (i.e., data sets), and an order (i.e., dataflow) for generating this data within the pathway. The case definition templates, in turn, are used within the organization to build proprietary web-screens for data capture, Orlova explains. Standardizing and embedding these templates into EHR products is a necessary step toward achieving semantic interoperability. This ensures that similar data elements, formats, and structures can be used across different HIT applications, Orlova says.

"For the first time, CDI professionals are giving the standard developers a new approach to standardize data specifications (data sets) using those that were initiated and used at the point of care," Orlova says. "This is very different from the current top-down approach of defining abstract minimum data sets or common data sets and expressing them using today's content standards such as HL7 Version 2.x message-based, HL7 CDA, or HL7/FHIR document-based standards."

These abstract minimum or common data sets may not be the ones that an organization or jurisdiction requires during a specific encounter. “Our CDI programs can contribute their templates to the standards development process, thus enhancing standard reference information models and semantic content standards,” Orlova says. “The CDI professionals have to lead the development of content standards today rather than struggle with implementation of the content standards that do not support the organization’s needs.”

2. AHIMA works with various health agencies including SAMSHA, ONC, NIST, National Library of Medicine (NLM), and the Centers for Disease Control and Prevention (CDC) to advance semantic interoperability through various standards and interoperability efforts, including content standardization, patient matching, data provenance, structured data capture, and other initiatives.
3. AHIMA leads the ISO/TC215 semantic content workgroup to develop international standards on metadata, data mapping quality, workforce development for terminology services and content management, and others.

Achieving Technical Interoperability

Technical interoperability creates a shared information exchange infrastructure to carry, send, receive, and communicate reliable data and information between HIT applications. It requires standards for information exchange, privacy and security, and identifiers.

AHIMA continues to collaborate with HIT vendors at IHE, HIMSS, and ISO/TC215 contributing to the development of the shared information exchange infrastructure. More specifically, AHIMA’s work includes the following:

1. An AHIMA representative serves as a liaison from ISO/TC215 to the International Telecommunication Union—a leading SDO for information and communication technology.
2. AHIMA is leading the development of mobile health (mHealth) standards at HL7.
3. AHIMA strives to engage traditional HIM vendors to participate in the testing of interoperability standards at the IHE Connectathons—annual HIT industry standards testing events—as well as at the annual HIMSS Interoperability Showcases to demonstrate capabilities of their products to interoperate with the EHR technology and other HIT applications.

HIT Standards are Going Global

In addition to developing interoperability standards, AHIMA is working to build a global workforce that can implement and operate interoperable HIT products outside of the United States in regions where the profession is not largely established or recognized.

“Health records are no longer the center of health information management,” Grain says. “We need to move from the record and forms to the data—that is the center. This requires extending an HIM professional’s skills.”

In many countries outside of the United States, AHIMA has helped to promote the adoption of a global curriculum for HIM, health informatics, and health information and communications technology, says Deborah K. Green, MBA, RHIA, executive vice president and chief innovation and global services officer at AHIMA.

Under the leadership of William Rudman, PhD, RHIA, executive director of the AHIMA Foundation, a global health workforce council—which includes academic and industry representatives and AHIMA—established global curricula for HIT, HIM, and informatics professionals.

“Growing a skilled workforce to apply HIM and HIT standards as well as standard practices will help contribute to safe quality care in communities [around the globe],” Green says. AHIMA’s focus includes promoting the use of HIM professionals in management and technical roles as well as worker training and certification.

Content management, information governance, and standards and systems interoperability are at the core of the curricula that were developed under the auspices of a cooperative agreement award given by the US Department of Commerce to AHIMA in 2012. The curricula have been broadly vetted, are in the public domain, and are being adopted in multiple countries in order

to foster development of a skilled and well-trained HIT, HIM, and informatics workforce. To date the curricula has been adopted by 13 countries, including the United Arab Emirates.

“With AHIMA’s critical role at ISO/TC215 and other international SDOs, the association is well-positioned to address interoperability challenges in information exchanges between countries,” Orlova says. This includes the development of international standards for training the HIM workforce in delivery of terminology services, content management, privacy protection, and information governance in healthcare. These standards have been included as future work items in the ISO/TC215 standard development activities.

Interoperability is a Journey, Not a Destination

In addition to collaboration, stakeholders must remember that interoperability is a journey—not a destination, Nusbaum says. Interoperability will and must continue to evolve over time commensurate with technological enhancements. These advancements will invariably lead to greater integration between all HIT products, EHRs, ancillary systems, and mobile technology such as fitness trackers and biometric devices. “It’s very important that all of one’s care across one’s lifetime from cradle to grave is integrated into a common health record,” Nusbaum says.

Sensmeier agrees, saying cohesive interoperability will break down information silos in healthcare and expand healthcare data’s reach. “We’re evolving from the hospital and acute care being the focus to now the whole continuum of care going far beyond the hospital,” she says. “It has broadened the focus, and interoperability is a really important part of that.”

As Big Data continues to proliferate, interoperability is critical, Nusbaum says. “The Big Data repositories include data from multiple sources, multiple systems, multiple places across the continuum of care, and multiple geographies,” he says. “Interoperability is the key to having completeness.”

HIM professionals have always guided data and information integrity. In an age of digital data, these functions are even more important, Green says. “HIM professionals must be involved in the adoption and use of interoperability standards within their organizations and in pushing systems providers to adopt and comply with standards,” Green says.

Notes

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