Informatics Education for HIM Professionals in the Era of Interoperable Standards-Based HIEs

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Electronic sharing of health information, both within and between organizational boundaries, requires the adoption of interoperable health information technology (HIT) solutions such as electronic health record (EHR) systems, laboratory information management systems (LIMS), radiology and pharmacy information systems, public health and research information systems, and numerous growing mobile HIT products.

Interoperability, which is the ability to share and exchange data between information systems, is the key to achieving efficiencies in healthcare with health information and communication technology. This article is focused on an urgent need to strengthen the current curricula for training informaticians and HIM professionals to support work in the new era of standardized interoperable electronic data exchanges. This need includes developing competencies, training courses, and programs focused on standardization of health information technology, health information systems interoperability, and information governance.

Based on the authors' five years of experience offering the online course "HIT Standards and Systems Interoperability" for clinicians and public health professionals at Johns Hopkins University, this article will discuss emerging roles for HIM professionals and the way of expanding current academic informatics and HIM curricula for professionals in healthcare, public health, IT, and law.[1]

Enabling Interoperability

As defined by Health Level Seven (HL7), interoperability is based on the following three pillars:

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

Though today interoperability has proven to be very difficult to establish, standards development organizations (SDOs) have been developing numerous HIT standards under these three interoperability components, including:[2]

1. Standards for representation of clinical and population health content in HIT products (data and information content, data structures and formats, etc.)
2. Standards for IT infrastructure for information exchanges and sharing (message-based point-to-point communication, shared document-based exchanges, secure e-mails, portable (mobile) devices, etc.)
3. Standards for information governance rules (i.e., business rules, privacy and security, identifiers, medical record management, etc.)

Fundamental to the interoperability efforts are the alignment of various HIT standardization activities conducted to date via ad hoc endeavors under a common HIT Standardization Framework as well as a HIT Interoperability Framework focused on standardization of content, information exchange infrastructure, and information governance.[3]

There is a need for the development of a skilled health information management (HIM) workforce capable in the adoption, operation, and use of the interoperable HIT products.

New Workforce Needed

HIM professionals are starting to recognize that their profession intersects with informatics in many ways. Facilities that adopted EHR technology had been utilizing informatics methods for codification of health information in EHR systems and clinical documentation improvement (CDI), ensuring patients access to their own information (consumer empowerment and engagement), data analytics and population health analysis, data reporting, and other applications.[4]

HIM professionals and informaticians are frequently engaged at the provider or payer level to ensure the fidelity of patient-related data that flow into or from EHRs and other information systems involved in the generation of patient-encounter data (i.e., LIMS, radiology, pharmacy, public health, data warehouses, financial systems, etc.).

The emerging roles for HIM professionals in the new interoperable electronic data sharing environment include:[5]

- Standard setters
- Educators
- Consumer advocates
- Experts in data structure
- Brokers of information
- Advocates of quality data
- Informaticians supporting clinical and business decisions
- Data analysts

The US Bureau of Labor Statistics estimated the addition of 35,100 new HIM positions by 2018 for a total of 207,600 employed—a 17 percent increase.[6] The Office of the National Coordinator for Health IT (ONC) made an assessment of workforce roles and competencies for EHR adoption in 2010, identifying roles such as "health information management and exchange specialist" and "health information privacy and security specialist" for permanent staff of healthcare and public health organizations such as office practices, hospitals, health centers, long-term care facilities, health information exchange organizations, and state or city public health agencies.[7] These roles have not been defined within the Department of Labor (DOL) Standard Occupational Classification (SOC) scheme.[8]

The United Kingdom National Health Service showed that in the electronic environment health records and information management professions will have 27 percent of jobs, compared to 37 percent of information technology and communication (ICT) jobs and three percent of informatics jobs.[9] In Canada, HIM occupations will account for roughly 16 percent of the projected 39,000 hiring requirements between 2014 and 2019. In addition to the traditional HIM roles of coders and record managers, a high risk of shortage of HIM professionals in Canada was noted in the following roles:[10]

- Senior Health Information Management
- Privacy
- Standards
- Data Quality Management
- Information Governance

Standards were identified as an emerging HIM field that will increase in importance with the adoption of interoperable HIT applications.[11] In a 2014 private sector survey in Canada, 67 percent of industry employers said they make a specialized HIM qualification a requirement or preference in hiring and 69 percent reported that standards training/certification in areas like information exchange standards, such as HL7 and DICOM, and content standards, such as LOINC and SNOMED, is either a hiring preference or a hiring requirement.[12]

Information governance is a new and senior HIM professional role focused on responsibilities for defining and implementing strategies and procedures for generating, managing, analyzing, and using data, as well as for ensuring compliance with quality, integrity, custodianship, privacy, and security standards and access and usability goals.[13,14] Information governance is closely linked with the field of e-discovery, which introduced into healthcare a new category of legally discoverable information, electronically stored information (ESI), which describes information stored in EHR systems and health information exchanges (HIEs). Information in EHRs and HIEs is now viewed the same way as paper-based health records by courts.[15]

In today's healthcare system, there are a few individuals in these new and highly specialized roles responsible for standards, including interoperability, information governance, and e-discovery. However, the demand for this expertise in healthcare and

public health is expected to increase.[16] Taking into account the complexity of the information and communication technologies environment, robust cross-training between HIM, IT, and law areas is needed.

Figure 1 [...] graphically presents the emerging HIM roles needed to support interoperability between information systems in the context of the HIT Interoperability Framework.[17] These roles include the management of the semantic (content), technical (IT infrastructure), and functional (information governance) interoperability components of a healthcare information system. New HIM roles for the operation of semantic interoperability resources include content managers, standards setters (developers), and data analysts.

New HIM roles for enabling functional interoperability (i.e., information governance services) include information governance specialists, information brokers, and consumer advocates. Professionals needed for enabling technical interoperability (IT infrastructure for data sharing/exchange) include IT and computer science specialists and vendors of EHRs, LIMS, and other HIT solutions.

New Training Needed to Educate New Workforce

Academic and continuing education programs in medicine, public health, IT, HIM, and law need to be extended to train the new workforce required to support standard-based interoperable HIT products. The required skilled workforce must be proficient in newly emerging areas of interaction among HIM, IT, health informatics, and law, as shown in Figure 1 [...].

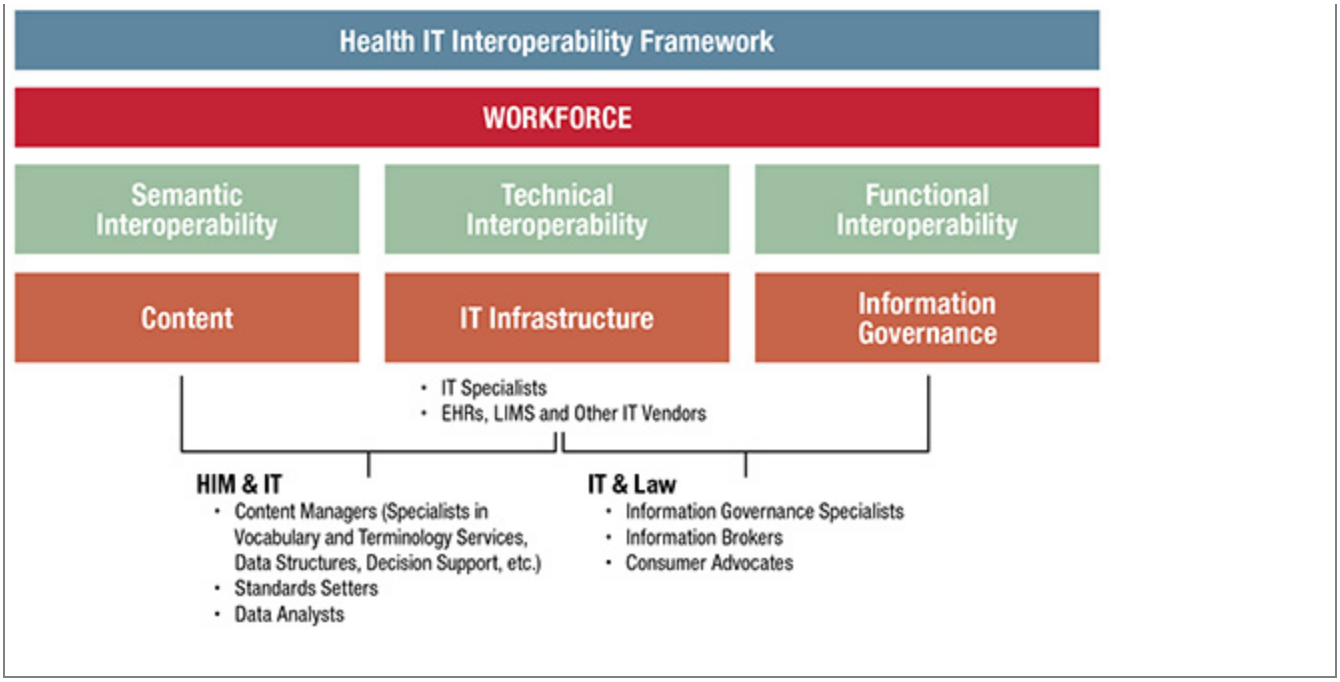
Despite the increase of informatics programs in the US in the past decade, a review of 35 master's degree curricula showed only three programs that currently offer courses on HIT standards and systems interoperability (Johns Hopkins University, Northwestern University, and Oregon Health Services University). Three universities include courses on standards (Northeastern University, Indiana University, University of Utah); and three other universities include topics on standards as part of their courses (Columbia University, University of Mississippi, and University of San Francisco). Only one of these programs, Johns Hopkins University, offers its course on HIT standards and systems interoperability in the open course learning environment, called Johns Hopkins Opencourseware, where any interested professional may access all course materials online for free and without enrollment in the program.

Operation of an interoperable health information exchange infrastructure will require a highly skilled workforce for supporting pillars of semantic (content), technical (information exchange infrastructure), and functional (information governance) interoperability illustrated in Figure 1. Based on the business needs of healthcare and public health organizations, two new areas of HIM training may emerge:

- Specialty 1—Content Managers; a bridge between traditional HIM and IT
- Specialty 2—Information Governance Specialists; a bridge between IT and law

The first specialty, Content Managers, will include training HIM specialists to develop and use standards-based tools for semantic interoperability (i.e., vocabulary and terminology services, tools for data structure, ontologies, computer-based coding, etc.). This will require a skilled workforce with competencies in HIM, coding, informatics, HIT standards, data analysis, and computer science. This specialty will support vocabulary and terminology services as well as data analytics services to address the needs of semantic interoperability between information systems in healthcare, public health, social services, and e-government initiatives at large.

Figure 1: New HIM Workforce Professions for Interoperability Infrastructure



The second specialty, Information Governance Specialists, will require a workforce with competencies in HIM, hospital administration, HIT standards, computer sciences, and law. This specialty will support business processes and information governance practices under the Health Insurance Portability and Accountability Act (HIPAA); the Internal Review Board (IRB) protections, including data breaches protection; Joint Commission regulations; and e-discovery and other regulations when using EHRs, LIMS, pharmacy systems, public health surveillance systems, personal health records, etc.

This specialized training should be offered to HIM as well as legal professionals working in the area of protecting data integrity, privacy, security, transparency, and accountability.[18]

Leaders in HIM, IT, informatics, public health, and legal training are invited to join AHIMA in developing competencies as well as specific training for HIM professionals for these two new specialties. AHIMA also invites these leaders to contribute to updating AHIMA's HIM Career Map to depict growing needs for HIM professionals in current and new roles that will support electronic health information sharing.

For more information regarding education for the electronic and interoperable environment, please contact Anna Orlova, PhD, AHIMA's senior director of standards, at anna.orlova@ahima.org.

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Notes

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