Connecting Functional and Semantic Interoperability—
The HIM Professional’s Role in Health IT Standardization

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THE HEALTH INFORMATION management (HIM) professional has a large role to play in ensuring health IT standardization—and the health IT interoperability that hopefully comes from those standardization efforts.

The Practice Brief “Standardizing Data and HIM Practices for Interoperability”1 on page 54 of this issue describes fundamentals of health information technology (HIT) standards and systems interoperability in healthcare, as well as activities of the AHIMA Standards Task Force to address challenges of semantic and functional interoperability through HIM practice standards. This article is closely related to that piece, and presents HIM solutions to enable interoperability through standards. It also defines the role of HIM professionals in adopting standardized, interoperable HIT products in healthcare.

Connecting Functional and Semantic Interoperability
Semantic interoperability (shared content) and functional interoperability (“rules of the road”) are closely aligned because information content defines the rules of information management—the data that can or cannot be shared based on the patient’s preferences stated in the consent for information sharing.

HIM practices within healthcare settings are focused on collecting health information, ensuring complete documentation, maintaining and protecting health data, and appropriately sharing and transmitting authorized information. Thus, HIM practices include various activities that support basic information management tasks in a healthcare organization throughout the information lifecycle. Standardization of the rules for performing these activities is critical to enable information sharing and trust in the information across organizations involved in information exchange.

Figure 1 above presents an overview of these tasks in the context of the information lifecycle, emphasizing the need to share information.

Quality health information is a product of healthcare activities involving clinicians, patients, and HIM professionals. It comprises all types of health data generated in the process of care delivery within an episode of care. An episode of care consists of various functions, such as registration, triage, assessment, testing, care planning, registries, and reporting. The order of performing these functions is determined by the type of encounter and is specified by organizational policies or jurisdictional law. Each of these functions is associated with capturing, producing, sharing, and using specific information in an organization’s records. The latter can also include information about a patient’s care received from other healthcare facilities.

Figure 2 on page 46 presents the hierarchy of the record content. This includes:

- **Level 1. Lifetime Record**: Longitudinal record that includes records from all episodes of care over the patient’s lifetime (prenatal care–birth–life–death)
- **Level 2. Episode of Care Record**: Multiple information components (records, documents, forms, etc.) generated
within various functions of the episode of care (see Figure 3 on page 47 for details)

- **Level 3. Function’s Record Component:** Specific records—such as registration record, admission record, test order record, and test result reports record—that are generated within a specific function of the episode of care (see Figure 3 for an illustration)

- **Level 4. Data Entry Record:** The record at the data entry point, which is a representation of data in a record component associated with a specific function, such as a test order document or form, care plan document or form, public health report/form, etc.

Semantic interoperability is achieved by standardized representation of data entry (Level 4) in the document or form using HL7 2.x, HL7 CCD/CDA, HL7 FHIR information content standards for data formats (place of the data element in the record) and specific codes for the data value. Data standards such as ICD, SNOMED, LOINC, CPT, etc. are also important for interoperability. More information on this topic is available in Appendix A “Examples of Data and Information Content Standards,” available online in AHIMA’s HIM Body of Knowledge.

Functional interoperability is achieved when rules for capture, aggregation, use, and reuse of data entries (Level 4) in the record component, episode of care record, and lifetime record (Levels 3, 2, 1, in ascending order) are consistently applied across information systems involved in information sharing.

Figure 3 presents the examples of the Episode of Care’s functions and record/documentation components generated at a specific function in the process of care.

AHIMA’s standards experts believe that HIM practice use cases will serve as a connecting point for defining user (physicians, nurses, HIM, and public health professionals) requirements for semantic and functional interoperability in the process of care.

This work is discussed in detail in the Practice Brief on page 54 of this issue.

The AHIMA Standards Task Force has been working on identifying a comprehensive list of HIM practice use cases in the context of clinical care workflow. In addition, the task force has also been working on developing the methodology for prioritizing these use cases to guide the development of HIT standards supporting HIM practices.

### AHIMA and HIM Practice Standards

AHIMA standards experts identified the following types of standards that the association is well positioned to develop:

1. Standards for Semantic Interoperability (i.e., semantic content standards, which are standardized case definition templates based on the activities of clinical documentation improvement programs in healthcare organizations)
2. Standards for Functional Interoperability (i.e., functional standards including HIM business requirements, checklists, and use cases)
3. Interoperability Standards (i.e., includes an assembly of standards for a specific clinical use (domain) such as radiology department, laboratory, and care coordination; these are under development by ISO/TC215)

AHIMA’s standards experts believe that standards for technical interoperability (secure e-mails, cross-enterprise document sharing, message-based and document-based data transmission, mobile applications) have been successfully developed by other standards development organizations (SDOs) such as Health Level Seven, the International Standards Organization (ISO), Integrating the Healthcare Enterprise (IHE), and the International Telecommunication Union (ITU). Through membership and leadership in these organizations, AHIMA will continue to contribute to and influence the development of technical standards by soliciting feedback from its members on
technical challenges with systems connectivity and information accessibility as needed.

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Investments in HIT and the human resource skill requirement impacts of adopting these technologies have been identified as two key demand drivers in various countries. The following two effects had been identified: the “employment effect,” impacting overall numbers of professionals required, and the “skill broadening effect,” affecting the percentage of professionals that require additional training or experience to meet resource demands.

The occupational group of HIM-Standards professionals was specifically identified as growing in terms of numbers and also requiring the broadening of skills among professionals (see the Practice Brief in this issue). “All HIM roles in the electronic HIT environment directly or indirectly require the use of both HIT and HIM practice standards. In fact, HIM-Standards is a new emerging role, and HIM-Standards practice standards. Remaining well informed on standards and national and international standardization efforts that impact patients’ and organizations’ data and business processes by:

- Attending training provided by the academic institutions, governmental agencies, SDOs, and AHIMA on standards and systems interoperability.
- Advocating for developing organization-specific training on using HIT and HIM practice standards including CDI training for on-boarding clinicians and residents, and HIM practice standards for HIT vendors.

2. Influencing how HIT and HIM practice standards are used in one’s organization:

- Assess current use of HIT and HIM practice standards in an organization and how they impact information management activities.
- Advocate for implementation of interoperable standards-based HIT solutions in one’s organization.
- Advocate for adding requirements for HIT and HIM practice standards in the organization’s procurement process when selecting HIT application and vendors.

3. Guide healthcare industry’s standards development. This can be done by participating in the AHIMA Standards Task Force and contribute in the development of HIT and HIM practices standards for semantic and functional interoperability in healthcare.

4. Represent HIM interests in developing HIT and HIM practice standards at various SDOs, such as HL7, ISO, and IHE.

5. Improving systems interoperability through standards in support of clinical and HIM practices:

- Collaborate with clinicians via the CDI programs to develop standardized clinical pathways (clinical workflow) and case definition templates (information content) in one’s organization.
- Advocate for the information governance program in one’s organization to enable the adoption of HIM practice standards for information management in healthcare.
- Guide the adoption of interoperable, standard-based HIT solutions in one’s organization across the healthcare sector.

For more information and resources about HIT standardization, webinars, training courses, content standardization tools, reading materials, and CEU opportunities, see this article’s Appendix B titled “Resources on HIT Standardization,” located online in AHIMA’s HIM Body of Knowledge at http://bok.ahima.org/.

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Figure 3. Examples of Episode of Care’s Functions and Records/Documents

THE “A” PORTION of the graphic represents a high level view of the episode of care functions and documentation. The “B” portion gives a detailed view.

A.
Clinical Episode of Care: Functions and Records Flow

Functions
- Patient Registration
- Assessment
- Testing
- Diagnosis & Care Plan
- Prescription
- Discharge

Records

B.
Episode of Care (EOC) Record Lifecycle

Record is Open
Record Entry
Record Entry
Record Entry
Record Entry
Record Entry
Record is Closed

Episode of Care Functions
- Registration/Admission
- Triage
- Assessment
- Lab/Diagnostic Test
- Diagnosis & Care
- Prescription
- Discharge/Transfer

Episode of Care Record Components
- Pt., Facility demographics,
  Consent for HIP
- Triage Notes,
  Vital Signs
- Medical Summary:
  Prelim Diagnosis and
  Care Plan
- Consent for Test,
  Test Order
  Test Result Report
- Confirmed Diagnosis
  and UpToDate
- Meds Order Dispense Report
- ADT Record

Notes
5. AHIMA. “Standardizing Data and HIM Practices for Interoperability.”
7. LaTour, Kathleen M., Eichenwald Maki, Shirley; and Pamela K. Oachs. Health Information Management.

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