New AHIMA Standard for Patient Registration: Aligning HIM Practices with Health IT

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PATIENT MATCHING CONTINUES to be a challenge for successful interoperability, with incorrect patient matching also growing in cost. Patient matching relies on proper registration of a patient by the healthcare facility.[1] Today, there is no standardized approach for patient registration across various healthcare organizations, which causes a lack of consistent and complete data elements that are captured in the patient registration process across organizations.

In September 2017, the AHIMA Standards Task Force—encompassing over 60 health information management (HIM), clinical, and health information technology (HIT) vendor stakeholders—published a white paper entitled "Patient Registration Demographics Data Capture and Exchange" in collaboration with Integrating the Healthcare Enterprise (IHE).[2] The white paper specifies patient demographic data elements that should be collected and exchanged for patient registration during an emergency visit at a healthcare organization. This is the second white paper that was developed by AHIMA and IHE as part of AHIMA's globally focused standardization efforts under the information governance (IG) initiative. The first white paper, entitled "HIT Standards for HIM Practices" was published in 2015.[3]

IHE Interoperability Standards

Integrating the Healthcare Enterprise (IHE) is a collaborative of HIT vendors, professional associations, governmental entities, and other healthcare professional stakeholders working to improve the way computer systems in healthcare share information. IHE promotes the coordinated use of established standards such as DICOM, Health Level Seven, and others to address specific clinical needs (use cases) in support of optimal patient care. IHE has been developing interoperability standards (white papers, integration and content profiles) in various domains including patient care coordination, dentistry, eye care, radiology, laboratory, pharmacy and quality, research, and public health. IHE interoperability standards are deployed in national, regional, and international projects all over the world. IHE developed a use case-driven process that supports the development and maintenance of the profiles—precise definitions of how standards can be implemented to meet specific clinical needs—and brings together users and HIT vendors in:[4]

- Defining healthcare needs for information sharing
- Identifying the appropriate HIT interoperability solutions to address these needs
- Selecting standards for these solutions in the integration and content profiles
- Testing the profiles at IHE Connectathons around the world to ensure that selected standards are interoperable in products that implemented these profiles

Patient Registration Today

Patient registration is the process of checking in a person to initiate an episode of care. Patient registration takes place in various healthcare settings and at the various functions of the episode of care. The patient registration process and data collection during this process are implemented differently in healthcare organizations in the US.

Various HIT systems are involved in the patient registration process including Registration-Admission/Discharge/Transfer (R-ADT) systems, health information systems, financial systems, payer systems, electronic health record (EHR) systems, electronic document management systems (EDMS), health information exchanges (HIE), personal health record (PHR) systems, and mobile health (mHealth) applications. For interoperability (i.e., trusted information sharing) to be successful,

standardized patient registration content and processes must be used by all healthcare organizations during the registration. Patient registration content must have a standardized list of data elements, collected in a standardized format, to enable patient identification and patient record matching across various HIT systems.

Without standardization, current problems with patient/record matching due to incomplete/inaccurate patient and encounter information will continue to persist, including:

- Data/record quality
    - Inconsistent data capture at registration; redundant and/or incomplete information
    - Lack of patient and provider identification or contact information
    - Insufficient and inaccurate information to support other functions in the episode of care
- Information access
    - Inability to get information about the unknown patient
    - Lack of information access from various sources to support patient registration
    - Redundant or incomplete information restricts access to critically needed clinical information[5,6]

Table 1: Patient Registration Use Case: Workflow and Information Flow

The Patient Registration Demographics Data Capture and Exchange white paper specified the following patient registration scenario for a walk-in patient in the emergency department (ED).

Use Case Scenario Name: Registration of Walk-in/Patient Presentation in ED		
Actors	**Business Actors:** Patient (or patient's legal representative), ED registration staff, billing staff (insurance verifier registrar), payer, clinician	
	Technical Actors: R-ADT system, health information system (HIS), financial system, payer system, electronic health record (EHR) system, electronic document management system (EDMS), health information exchange (HIE), personal health record (PHR) system, mobile health (mHealth) application	
Step #	Workflow Steps	Information Items (Documents/Records/Data)
1.	Patient is triaged and presents to ED.	Patient Registration Record: 1. Patient demographics (e.g., name, date of birth, address) 2. Visit demographics (e.g., enterprise medical record number, date/time of encounter, reason for visit, list of barcodes, etc.) 3. Physician demographics (name, physician ID, department/service)
2.	Patient presents to the registration staff.	

3.	Registration staff identifies patient, asks patient to complete necessary forms (paper or electronic), and checks in/registers the visit in R-ADT system. In the case of "trauma/unidentified patient," registration staff assigns a tag with the ID number to be used in the episode of care.	4. Reason for visit 5. Consents for visit (procedure, treatment, etc.; may be implied consent) 6. Consent for information sharing 7. eSignature for registration staff 8. Wristband (patient ID bracelet) 9. Advanced Beneficiary Notice (ABN) Risk Management (RM)/Infection Control (IC)/Public Health/Population Health (PH) information Audit Record: Who, When, Why, What
4.	*HIS creates an audit record of the encounter.*	
5.	*R-ADT system searches and obtains patient and visit-relevant information from various systems (HIS, EHR, financial systems, EDMS, HIE, PHR, mHealth app).*	
6.	Registration staff validates patient information and prints the ID bracelet and corresponding labels with barcodes for the patient; staff signs the record with e-signature or in ink. Registration staff sends patient to insurance verifier or conducts insurance verification.	

7.	Insurance verification is conducted by the registration staff or insurance verifier.	Insurance information: 1. Payer demographic 2. Insurance ID 3. Authorization to bill insurance 4. Coverage 5. Co-pay/deductible 6. eSignature for insurance verifier Payment information: 1. Invoice for service 2. Payment receipt 3. Payment plan, if needed 4. eSignature for Billing Staff Updated Audit Record: Who, When, Why, What
8.	Registration staff or insurance verifier verifies patient insurance information; contacts payer, if needed; obtains authorization; and requests/collects co-pay or makes payment arrangements.	
9.	*R-ADT system communicates with the payer system directly or via HIE to obtain patient insurance information. Patient information is updated in the financial system.*	
10.	*R-ADT system updates patient information in PHR via mHealth app.*	Updated Patient Registration Record Updated Audit Record: Who, When, Why, What
11.	Registration staff assembles all documents necessary for the episode of care and completes the registration by signing the Episode of Care Record with e-Signature in the EHR. This may be done	Documents may be scanned as appropriate (e.g. insurance card, driver's license, paper consent, HIPAA notice, and other) Updated Patient Registration Record eSignature for Registration Staff Notification of Record Availability (including notification to Care Team) Acknowledgement of Receipt

	automatically when the staff completes the record (all data are entered and verified) and closes the registration record for this patient. Staff sends patient to clinician for assessment. Clinician opens patient record to begin assessment and sends the acknowledgement of receipt.	
12.	*Registration information is uploaded into EHR. EHR sends Notification of Record Availability to clinician.*	*Updated Patient Registration Record* *Notification of Record Availability*
13.	*EHR sends the Acknowledgement of Receipt back to the R-ADT.*	*Acknowledgement of Receipt*
14.	*Audit trail for the personnel and systems involved in patient registration is completed in HIS.*	Updated Audit Record: Who, When, Why, What
Entry Condition		Pre-registration may happen as a part of EMS transport of the patient, pre-registration of the patient before arriving to the emergency department.
Exit Condition		After the data is available, the HIS/EHR will contain a record that can be used for the patient care function as well as the audit trail record.
Quality Requirements		Real-time patient information verification.

(Grey highlights and italic font indicate workflow steps related to HIT systems (technical actors) only.)

Use Case-Driven Approach

In computer science, a use case-driven approach is the foundational methodology for documenting user needs. This has been adopted by national and international HIT efforts to support HIT systems interoperability and information sharing across systems. In collaboration with IHE, the AHIMA Standards Task Force published a series of articles in the *Journal of AHIMA* in 2017 on standardizing user needs for HIT solutions using the use case approach:

- Bourquard, Karima; Orlova, Anna; and Charles Parisot. "Understanding User Needs for Interoperability: Defining Use Cases in eHealth." *Journal of AHIMA* 88, no. 6 (June 2017): 42-45. http://bok.ahima.org/doc?oid=302159.
- Orlova, Anna; Bourquard, Karima; and Charles Parisot. "Understanding User Needs for Interoperability: Standards for Use Cases in eHealth." *Journal of AHIMA* 88, no. 9 (September 2017): 40-44. http://bok.ahima.org/doc?oid=302252.

A use case has also been developed for patient matching, which can be found in the table "AHIMA Patient Registration Use Case: Workflow and Information Flow" below. Table 1 depicts the first of 18 scenarios identified by the AHIMA Patient Registration Use Case, a new AHIMA business standard that served as a basis for the white paper.[7] The ED Use Case scenario identified business (humans) and technical (information systems) actors involved in the registration process, the workflow, and data flow for various information categories (data sets: patient, visit, provider, insurance demographics) captured during the workflow steps, as well as pre- and post-conditions for the use case scenario (i.e., start and finish, quality requirements). Table 2 below presents all 18 scenarios that require patient registration information capture and sharing using multiple HIT systems in various settings.

Information collected during the registration process in these scenarios includes:

- Patient Registration Information:
    - Patient, visit, physician demographics
    - Reason for visit
    - Consents (visit, information sharing)
- Insurance information
- Payment information
- Notification of record availability
- Acknowledgement of receipt
- Audit record: who, when, why, what

From the information categories (data sets) listed above, the Patient Registration Demographics Data Capture and Exchange white paper focused on patient demographics data only and provided the detailed requirements and constraints on the relevant Health Level Seven (HL7) v2.5.1 segments from the IHE Information Technology Infrastructure, Patient Administration Management (IHE ITI PAM) Profile for these data.

Harmonization of the similar data elements (e.g. Name (for patient and provider) and Address (for patient, healthcare organization and insurance/payer organization)) was further conducted across all other information categories (data sets) by the AHIMA Standards Task Force members. Therefore the data elements collected—the code sets and data formats—are used consistently in the patient registration process even when this information or parts of the information may reside in various HIT systems (data sources/technical actors).

Table 2: AHIMA Patient Registration Use Case Scenarios by Setting

Emergency Department	Inpatient Setting (Hospital)	Outpatient Setting

1. Registration of walk-in/patient presentation in ED 2. Registration initiated/conducted by clinicians for life threatening situations 3. Registration for diagnostic testing during ED stay 4. Registration for medication administration during ED stay 5. Registration for pre-admission of patients into the hospital 6. Sending visit information for follow-up care	7. Registration for planned admission 8. Registration for unplanned admission 9. Registration for diagnostic testing during hospital stay 10. Registration for medication administration during hospital stay 11. Registration for treatment during hospital stay 12. Registration/scheduling for post-acute care follow-up	13. Registration for walk-in/patient presentation 14. Registration/scheduling for planned visit 15. Registration/scheduling for diagnostic testing (during the visit, and after the visit) 16. Registration/scheduling for treatment including observation services (during the visit, and after the visit) 17. Registration for medication administration 18. Registration for post-visit follow-up

Next Steps: Guiding HIT Standardization to Support Patient Registration

Building upon the successful start of the 2017 white paper, the AHIMA Standards Task Force members are now working with IHE on the US National Extension for Patient Registration in the IHE ITI Patient Administration Management Profile (ITI PAM US National Extension) to include detailed requirements and constraints on all patient registration data elements listed above for the 18 scenarios (see Table 2). The target audience for the ITI PAM US National Extension includes:

- Healthcare organizations that purchase the HIT products for patient registration and patient administration management
- HIT vendors of EHR and ancillary systems involved in patient registration data capture and sharing
- HIE entities that manage and exchange patient registration data

The ITI PAM US National Extension profile will ensure standardization in data capture across HIT products, thus providing solutions to trust information exchanged between systems.

Notes

1. Office of the National Coordinator for Health IT. "Patient Identification and Matching Final Report." February 7, 2014. www.healthit.gov/sites/default/files/patient_identification_matching_final_report.pdf.
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3. Integrating the Healthcare Enterprise. "Health IT Standards for Health Information Management Practices." September 18, 2015. http://qrs.ly/lb4vec0.
4. International Organization for Standardization Technical Committee 215 Health Informatics. "ISO Technical Reports (TR). ISO/TR 28380-1:2014. IHE global standards adoption—Part 1: Process; ISO/TR 28380-2:2014. IHE global standards adoption—Part 2: Integration and content profiles; ISO/TR 28380-3:2014. IHE global standards adoption—Part 3: Deployment."
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6. Kuhn, Thomson et al. "Clinical Documentation in the 21st Century." *Annals of Internal Medicine* 162, no. 4 (2015): 301-314. http://annals.org/aim/article/2089368/clinical-documentation-21st-century-executive-summary-policy-position-paper-from.

7. AHIMA. “Specification of Use Cases for Information Management Practices in Healthcare: Patient Registration Use Case.” 2017.

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