AHIMA Standards Task Force

Information Governance Standards Project

Specification of Checklists and Use Cases for

AHIMA Information Governance Principles for Health Care (IGPHC)

Chicago, Illinois, USA

2016

Table of Contents

[Synopsis 5](#_Toc454767396)

[Specifications of Use Cases and HIM Checklists 11](#_Toc454767397)

[Patient Registration 11](#_Toc454767398)

[Copy and Paste 26](#_Toc454767399)

[Record or Data Quality 32](#_Toc454767400)

[Patient Matching 36](#_Toc454767401)

[Transition of Care 37](#_Toc454767402)

[Conformity Assessment 38](#_Toc454767403)

[Appendix 1. Glossary of Terms 39](#_Toc454767404)

[Appendix 2. HIM Roles and Actor List 40](#_Toc454767405)

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# Synopsis

**Overview**

Built upon the established collaboration with the Integrating the Healthcare Enterprise (IHE) – a collaborative of health information technology (HIT) vendors, users and associations of healthcare professionals to develop interoperability standards – AHIMA has been working with vendors of electronic health records (EHR), other health information systems (HIS) and health information technology (HIT) applications guiding the development of functional standards to support health information management (HIM) practices in electronic environments.

To address user needs with HIT adoption, AHIMA has been leading the development of best practices and guidelines for information management and information governance as a part of a new globally-focused AHIMA initiative on Information Governance (IG).[[1]](#footnote-1),[[2]](#footnote-2) The IG initiative provides an organization-wide framework for managing information throughout its lifecycle, while, supporting the organization’s strategy, operations, regulatory, legal, risk, and environmental requirements. The AHIMA IG Initiative – a key component of AHIMA's overall strategy to develop guidelines, operating rules and standards for healthcare documentation practices – served as a foundation for the AHIMA-IHE collaborative activities, which resulted in publication of the AHIMA-IHE white paper “Health IT Standards for HIM Practices” (<http://qrs.ly/lb4vec0>) in 2015.

This document specifies HIM Checklists and Use Cases for the selected business requirements specified under the eight AHIMA IG principles in health care (IGPHC) such as *information availability, integrity, protection, accountability, transparency, compliance, retention and disposition.* Business requirements under IGPHC principles were specified in the AHIMA Specification of Business Requirements for

AHIMA Information Governance Principles for Health Care published in August 2016 (URL: xxxxx).

Table 1 shows AHIMA efforts for specifying HIM Checklists and Use Cases completed in 2015 as a part of the AHIMA-IHE white paper as well as the 2016 effort of the AHIMA Standards Taskforce.

Table 1. HIM Checklists and Use Cases for HIT Standards

|  |  |
| --- | --- |
| Use Cases for HIT Standards | |
| 2015 AHIMA-IHE White Paper | 2016 AHIMA Specification |
| 1. All documents in the episode of care record are accounted for 2. Episode of care record is complete and closed 3. Release of Information (ROI) to external requestor 4. Audit for the episode of care record 5. Audit for the ROI | 1. Patient registration 2. Record and data quality 3. Copy and paste 4. Patient matching 5. Transition of care |

Specification of HIM Checklists and Use Cases is a part of the collaborative informatics-based approach for translating HIM practices into HIT standards that was deployed in the 2015 AHIMA-IHE White paper. This approach of guiding the development of HIT standards to support HIM practices is shown on Figure 1 below.

**Approach**



**IG Principles in Healthcare | Use Cases for Standards**

Figure 1. Approach for Guiding the Development of HIT Standards to Support HIM Practices

(Source: AHIMA-IHE White Paper, 2015)

**Target Audience**

This specification is targeted to

1. Organizations (e.g. healthcare organizations, public health agencies, payers/insurance companies, academia) involved in origination, management, and use of healthcare data
2. Health professionals that originate, manage, and use healthcare data
3. Implementers - Organization’s staff involved in implementation of HIT Systems
4. HIT vendors and consultants involved in the design, development and implementation of HIT systems
5. Health information exchange (HIE) entities that collect, manage, and exchange data
6. Standards developers at various standards development organizations (SDOs)
7. Consumers (e.g. patients, care givers, employees, employers) involved in creation, management, and use of healthcare data and
8. Educators involved in HIT, HIM and informatics training.

In 2016, we are focusing on target audiences #1 and 2.

**Scope**

This document presents specifications of the selected 2016 Use Cases listed in Table 1 above and respective HIM Practice Checklists (Checklist). It also specifies the relationship/dependencies between Use Case and Checklist item and respective business requirement detailed in the 2016 AHIMA Specification of Business Requirements (currently under public review).

Checklists and Use Cases cover all health information (clinical, financial and operational), on all media and formats, created by a healthcare organization in its enterprise information management system. This includes legal health records and information contributed by patients.

**Glossary of Terms**

Glossary of terms was developed in the 2015 AHIMA-IHE White paper. In 2016, we continued to update the glossary as a separate document. We are also in the process of uploading our terms into the Standards Knowledge Management Tool (SKMT, URL: <http://www.skmtglossary.org/>) – an international Joint Initiative for Global Standards Harmonization: Health Informatics Document Registry and Glossary. Appendix 1 contains definitions for the terms used in this specification.

**Development Process**

HIM Checklists and Use Cases have been developed based on the functional requirement analysis[[3]](#footnote-3) of the selected business requirements specified in the 2016 AHIMA Specification of Business Requirements[[4]](#footnote-4) (currently under public review) as well as literature review of the best HIM practices related to documentation management.

First, we developed a Use Case description specifying

(a) **actors** - business (people) and technical (information systems) - and their roles in the use case

(b) **actions (functional requirements)**  - workflow steps, documents/records/data types by each step (data flow), and the role of actors in each step

(c) **the boundaries** of the use case (start-end) by specifying entry and exit conditions, and

(d) **non-functional requirements** (quality, etc.)

Use Cases were presented in the tabular format[[5]](#footnote-5) and accompanied by the Unified Modeling Language (UML) sequence diagram.[[6]](#footnote-6)

Please note that we used two terms for the actors in the Use Cases:

* Business actors (people: HIM professionals, clinicians, patients, and other) and
* Technical actors (information systems: EHR, PHR, mHealth, and other).

This separation between business and technical actors is important to align the roles of HIM professionals specified in the Use Cases with their roles and responsibilities that were further outlined in the HIM Practice Checklist. Please see Appendix 2 for the full list of HIM roles (Table A) and actors (business and technical) involved in electronic HIM practices (Table B). Specification of technical actors (information systems) will allow aligning HIM requirements with the applicable technical actors from the IHE interoperability standards, e.g., Content Creator (information systems that acts as information creator and sender) and Content Consumer (information systems that acts as information receiver) and others.

Second, to specify practices (items) in the Checklist applicable to Use Case workflow step, we conducted mapping between the Use Case workflow step and business requirement statement, and specified correspondent items. We further conducted literature review of the best HIM practices and obtained examples of these practices and samples of respective documents/records/data types that have been in use in the healthcare organizations. These practices were further harmonized and generalized in the consensus-based discussions of the subject matter experts (SMEs) of the AHIMA Standards Task Force in order to develop a standard HIM Practice Checklist by business requirement.

Figure 2 presents the requirement analysis process that we used specifying dependencies between Business Requirements, Checklists and Use Cases.

Figure 2. Development Process: Requirement Analysis of Use Cases and HIM Practice Checklists by Business Requirement

For conformity assessment, finalized HIM Practice Checklist items and business requirement statements were further used to harmonize them with the AHIMA Information Governance Adoption Model (IGAM),[[7]](#footnote-7) so that organizations interested in the IGAM assessment could prove that each requirement has been met.

The requirements were reviewed by a broader audience of HIM professionals and other stakeholders as part of the public comment period.

**References**

Each HIM Use Case and Checklist section contains references to the materials used in the specification including examples of practice documentation (operational procedures) and samples of respective documents/records/data types from healthcare organizations as well as published sources, and other.

**Document Structure**

This document specifies HIM Use Cases and Practice Checklists in the following order: 1-Patient Registration, 2-Copy and Paste, 3-Record and Data Quality, 4-Patient Matching and

5-Transition of Care. Each section consists of the following sub-sections:

**Use Case: *<Name>***

Definitions

Problem Description

Solutions: Use Case Scenario(s)

Scope

Actors (Business, Technical)

Use Case Description Table

* Name
* List of Actors
* List of Workflow Steps
* List of Documents/Records/Data by Actor, by Workflow Step
* Entry and Exit Conditions
* Non-functional Requirements

UML Workflow and Dataflow Diagram (Sequence Diagram)

**Mapping of Use Case’s Workflow Steps to Business Requirements and Checklist Items**

**HIM Practice Checklist: *<Name>***

Business Requirement

List of Items by Actor, by Workflow Step

List of Documents/Records/Data by Actor, by Workflow Step

**Conformity Assessment: *<Name>***

**References**

# Specifications of Use Cases and HIM Checklists

## Patient Registration

Definitions

Patient Registration is the process of …….ADD TEXT

Problem Description

Patient registration takes place in various healthcare settings….…….ADD TEXT using list below:

Patient Registration Workflow: (Scheduled Versus Un-Scheduled)

1. Referring/Ordering Physician
2. Scheduling/Walk-in/Patient Presentation
3. Medical Screening Exam(Non-scheduled)
4. Insurance Verification
5. Pre-admission
6. Registration

Solutions: Use Case Scenario(s)

The following is the list of scenarios that involve patient registration:

1. Acute care visit to emergency department:
2. Registration of walk-in/patient presentation in ED
3. Registration for diagnostic testing during ED stay
4. Registration for medication administration
5. Registration for pre-admission of patients into the hospital
6. Registration for follow-up care
7. In-patient setting visit (hospitals, clinics and other):
   1. Registration for planned admission
   2. Registration for diagnostic testing during hospital stay
   3. Registration for medication administration
   4. Registration for treatment during hospital stay
   5. Registration/Scheduling for post acute care follow-up
8. Out-patient setting visit:
9. Registration for walk-in/patient presentation
10. Registration/Scheduling for planned visit
11. Registration/Scheduling for diagnostic testing
    1. during the visit
    2. after the visit
12. Registration/Scheduling for treatment
    * 1. during the visit
      2. after the visit
    1. Registration for medication administration
    2. Registration for post-visit follow-up

Scope

Figure 3 presents Patient Registration Use Case scenarios in the overall context of Episode of Care’s functions[[8]](#footnote-8) and record components generated at a specific function in the process of care.

Figure 3: Patient Registration in the Episode of Care – REVIEW AND ALIGN WITH AGREED SCOPE

In 2016, we will focus on the following Patient registration scenarios: Select from the abc list above

1. Acute care visit to emergency department:
2. Registration of walk-in/patient presentation in ED
3. Registration for diagnostic testing during ED stay
4. Registration for medication administration
5. Registration for pre-admission of patients into the hospital
6. Registration for follow-up care

**Scenario A: Acute Care Visit to Emergency Department:**

**Use Case A1: Registration of Walk-in/Patient Presentation in ED**

Actors (Business and Technical)

Table 2. Use Case A1: Business and Technical Actors and Their Roles - REVIEW

|  |  |
| --- | --- |
| **Actors** | **Description of the Role in the Use Case** |
| **Business Actors** | |
| Patient or caregiver | Individual and/or his legal representative who are seeking healthcare |
| Registration staff | Staff responsible for registering patients[[9]](#footnote-9) |
| Billing staff | Staff responsible for generating a bill for healthcare services performed. This includes Insurance Verifier Registrar, who verifies patient insurance information and communicates with the payor. |
| Payor | Entities involved in paying for medical care |
| **Technical Actors** | |
| Registration –Admission, Discharge, and Transfer (R-ADT) System | An administrative information system that stores demographic information and performs functions related to registration, admission, discharge, and transfer of patients within the organization.[[10]](#footnote-10) |
| Electronic Health Record (EHR) System | An information system that ensures the longitudinal collection of electronic health information for and about persons; enables immediate electronic access to person- and population- level information by authorized users; provides knowledge and decision support that enhances the quality, safety, and efficiency of patient care; and supports efficient processes for healthcare deliver.[[11]](#footnote-11) |
| Health Information System (HIS) | Information system that supports healthcare delivery within a healthcare organization. It includes R-ADT, EHR, laboratory, radiology, pharmacy, financial, administrative and other information systems. |
| Electronic Document Management System (EDMS) | Software consisting of many component technologies that enable healthcare businesses to use documents to achieve significant improvements in work processes.[[12]](#footnote-12) |
| Financial System | Information system used by a healthcare organization to perform administrative and financial transactions associated with healthcare delivery. |
| Payor System | Information system used by health plans to manage administrative and financial functions associated with the coverage and financing of healthcare for individuals enrolled in the health plan (health plan members). These functions manage information regarding the individual’s enrollment, eligibility, coverage and benefits, authorizations, claims, care coordination and other information related to the member. |
| Personal Health Record (PHR) System | Information system used to create, review, annotate and maintain records by the patient or the caregiver for a patient. The PHR may include medications, medical problems, allergies, vaccination history, test results, visit history or communications with healthcare providers. |
| Health Information Exchange (HIE) | An infrastructure to support information exchange between information exchange participants |
| Mobile Health (mHealth) Application | mHealth application (apps), i.e. portable device including but not limited to mobile phones, Personal Digital Assistants (PDAs) and other, that enables access to patient information across various information systems. |

Use Case Description Table

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name: Registration of Walk-in/Patient Presentation in ED** | | | |
| Actors | **Business Actors**: Patient, Caregiver, Registration staff, Billing staff (Insurance verifier registrar), Payor | | |
|  | | |
| **Technical Actors**: R-ADT System, HIS, Financial System, Payor System, EHR, EDMS, HIE, PHR, mHealth app | | |
| # of Step | Workflow Steps | | Record, Documents, Data Sets, Codes |
| 1 | Patient walks into ED and presents to the Registration staff | | Encounter Record:   1. Patient demographics (name, DoB, address, Insurance ID) 2. Visit demographics (enterprise medical record number, date/time of encounter, list of barcodes, reason for visit 3. Attending physician demographics (name, PID, department/service) 4. Codes for reason for visit 5. Consent for visit 6. Consent for information sharing   Audit record: Who, When, Why, What |
| 2 | Registration staff identifies patient, asks patient to complete necessary forms (paper or electronic), and register the visit in R-ADT System | |
| 3 | HIS creates an audit record of the encounter | |
| 4 | R-ADT System searches and obtains patient and visit-relevant information from HIS, EHR, Financial Systems, EDMS, HIE, mHealth app, PHR | |
| 5 | Registration staff validates patient information, sign the record with e-signature and print bracelet with barcodes. | |
| 6 | Registration staff sends patient to Insurance verifier registrar | | Insurance information:   1. Payor typology 2. Insurance ID 3. Coverage 4. Co-pay |
| 7 | Insurance verifier registrar verifies patient insurance information; contacts payor, if needed; and collects co-pay | |
| 8 | R-ADT System communicates with the payor system directly or via HIE to obtain patient insurance information. Patient information is updated in the Financial System | |
| 9 | R-ADT System updates patient information in PHR via mHealth app | | Updated patient demographic |
| 10 | Registration information is uploaded into EHR system | | Encounter record |
| 11 | Audit trail for the personnel and systems involved in patient registration is completed in HIS | | Audit record: Who, When, Why, What |
| Entry Condition | | R-ADT System | |
| Exit Condition | | HIS with audit trail | |
| Quality Requirements | | Real time patient information verification | |

UML Workflow and Dataflow Diagram (Sequence Diagram)

Figure 4 presents the Unified Modeling Language (UML) sequence diagram to demonstrate roles and relationship of the actors (business and technical), workflow and data flow associated with the use case.

Figure 4: UML Sequence Diagram: Use Case A1 - Registration of Walk-in/Patient Presentation in ED.

Numbers 1-11 indicate the workflow steps.

**Mapping of Use Case’s Workflow Steps to Business Requirements and Checklist Items**

| Health Information Availability: Business Requirements | Checklist Items | Use Case Steps |
| --- | --- | --- |
| 1. Ability to capture and maintain information in a manner that ensures timely, accurate (complete and correct), and efficient access and retrieval. – *See Integrity Requirement #1 and #5; Protection #9; Accountability #7; Transparency #5* | Steps 1, 2, 4, 8 | Step 1: Patient walks into ED and presents to the Registration staff  Step 2: Registration staff identifies patient and register the visit in R-ADT System  Step 4: R-ADT System searches and obtains patient and visit-relevant information from HIS, EHR, Financial Systems, EDMS, HIE and mHealth app  Step 8: R-ADT System communicates with the payor system directly or via HIE to obtain patient insurance information. Patient information is updated in the Financial System |
| 2. Ability to access information across various systems (electronic and manual) and across patient populations. This includes the abilities to search, identify, locate, and retrieve clinical, payer, labor resource management and research information required to support organization’s ongoing activities via queries. This requirement is focused on how information from various sources is accessed. *– See Availability # 3; Integrity #5 and #7; Retention #1 and #6* | Steps 3, 4, 8, 9, 10, 11 | Steps 3, 4, 8, 9, 10, 11  Step 3: HIS creates an audit record of the encounter  Step 9: R-ADT System updates patient information in mHealth  Step 10: Registration information is uploaded into EHR system Step 11: Audit trail for the personnel and systems involved in patient registration is completed in HIS |
| 3. Ability to search, identify, locate and retrieve an individual’s specific information from continually-expanding volumes of information, across multiple systems (including various HIT products, data warehouses, payer data systems, business and research information systems, and paper-based repositories. This requirement includes tracking sources where information resides. *– See Availability # 2; Integrity #5* | Steps 3, 4, 8, 9, 10, 11 | Steps 3, 4, 8, 9, 10, 11 |
| 8. Ability to access information created with legacy hardware and software systems within an organization. In case of impending system obsolescence, information with organizational value should be migrated to currently supported hardware/software and/or converted/migrated into a compatible format from non-compatible media (MAC vs PC) and non-compatible software versions. *– See Integrity #5* | Step 4 | Step 4 |
| 9. Ability to access information imported from an external organization by incorporating pertinent content into the organization’s health information system, e.g., by scanning, digitizing and codifying external information, as defined by organization and jurisdictional policies. *– See Integrity #5* | Steps 4, 8, 9 | Steps 4, 8, 9 |

|  |  |  |
| --- | --- | --- |
| **Health Information Integrity: Business Requirements** | Checklist Items | Use Case Steps |
| 2. Ability to maintain integrity of information to comply with safety, quality of care, and compliance to applicable voluntary, regulatory and legal requirements. *– See Compliance #1, #2, #4* | Steps 3, 5, 7, 10, 11 | Step 3: HIS creates an audit record of the encounter  Step 5: Registration staff validates patient information and sign the record with e-signature  Step 7: Insurance verifier registrar verifies patient insurance information; contacts payor, if needed; and collects co-pay  Step 10: Registration information is uploaded into EHR system Step 11: Audit trail for the personnel and systems involved in patient registration is completed in HIS |
| 3. Ability to maintain integrity of information through adherence to an organization’s policies and procedures, including compliance to retention, archive, and destruction guidelines and requirements. *– See Retention #2, #3* | Steps 3, 5, 10, 11 | Steps 3, 5, 10, 11 |
| 6. Ability to ensure the integrity of information through reliable system controls that support the organization’s ongoing activities across various systems. | Step 3, 4, 8, 9, 10, 11 | Steps 3, 4, 8, 9, 10, 11  Step 4: R-ADT System searches and obtains patient and visit-relevant information from HIS, EHR, Financial Systems, EDMS, HIE and mHealth app  Step 8: R-ADT System communicates with the payor system directly or via HIE to obtain patient insurance information. Patient information is updated in the Financial System |
| 7. Ability to manage integrity of information received from disparate electronic systems, both internal and external to the organization, via data provenance, i.e., identification of original source of document creation, date of creation, and date of any changes of content of document or data within the document. *– See Availability #2, #6* | Step 3, 11 | Steps 3, 11 |

|  |  |  |
| --- | --- | --- |
| **Health Information Protection: Business Requirements** |  |  |
| 1. Ability to ensure appropriate levels of protection from breach, corruption and loss of information that is private, confidential, classified and essential to business continuity or that otherwise requires protection. | Steps 2, 3, 4, 8, 10, 11 | Steps 2, 3, 4, 8, 10, 11  Step 2: Registration staff identifies patient and register the visit in R-ADT System |
| 4. Ability to manage and balance compliance with the varying degrees of protection, mandated by laws, regulations, and/or organizational policies for information generated and managed by an organization. *– See Compliance #1* | Steps 2, 5, 6, 7 | Step 5: Registration staff validates patient information and sign the record with e-signature  Step 6: Registration staff sends patient to Insurance verifier registrar  Step 7: Insurance verifier registrar verifies patient insurance information; contacts payor, if needed; and collects co-pay |
| 6. Ability to assign and manage appropriate levels of information access and security clearance to all members of the workforce and other authorized parties relevant to their roles or duties. *– See Transparency #6* | Steps 2, 5, 6, 7 | Steps 2, 5, 6, 7 |
| 7. Ability to maintain appropriate security safeguards, clearly defined and enforced by organizational policies, designed to protect electronic information from being inappropriately viewed, e-mailed, downloaded, uploaded, or otherwise proliferated—intentionally or inadvertently, even by individuals with legitimate access to the system. *– See Transparency #6* | Steps 4, 8, 9 | Step 4: R-ADT System obtains patient and visit-relevant information from HIS, EHR, Financial Systems, EDMS, HIE and mHealth apps  Step 8: R-ADT System communicates with the payor system directly or via HIE to obtain patient insurance information. Patient information is updated in the Financial System  Step 9: R-ADT System updates patient information in mHealth |
| 8. Ability to provide physical security safeguards of computing and access devices or any equipment containing private, secret, or confidential information or intellectual property of the organization. – *See Transparency #6* | Steps 3, 4, 8, 9, 11 | Steps 3, 4, 8, 9, 11 |

|  |  |  |
| --- | --- | --- |
| **Health Information Accountability: Business Requirements** | Checklist Items | Use Case Steps |
| 8. Ability to ensure that policies and processes are up-to-date, adopted; and cover all types of information in all media. *– See Compliance #2 and #4* | Steps 3, 4, 8, 9, 11 | Steps 3, 4, 8, 9, 11 |

|  |  |  |
| --- | --- | --- |
| **Health Information Transparency: Business Requirements** | Checklist Items | Use Case Steps |
| 1. Ability to document, in an open and verifiable manner, an organization’s processes and activities related to information governance. | Steps 2, 3, 5, 7, 11 | Steps 2, 3, 5, 7, 11 |
| 2. Ability to share an organization’s documentation with the workforce and other appropriate interested parties (e.g., business associates, patients and consumers, governmental authorities, auditors and investigators, litigants and/or the general public) within legal or regulatory limitations, and consistent with the organization’s business needs. | Steps 2, 3, 5, 7, 11 | Steps 2, 3, 5, 7, 11 |
| 3. Ability to define appropriate information uses and the processes for ensuring compliance with policies on appropriate information use. *– See Compliance #1, #2 and #3* | Steps 2, 3, 5, 7, 11 | Steps 2, 3, 5, 7, 11 |
| 4. Ability to document that the information governance program includes its information management and information control policies and procedures. | Steps 2, 3, 5, 7, 11 | Steps 2, 3, 5, 7, 11 |
| 5. Ability to:   * document the principles and processes that govern the information governance program * accurately and completely record the activities undertaken to implement the information governance program and * respond to authorized interested party in a timely manner. *– See Availability #1* | Steps 2, 3, 5, 7, 11 | Steps 2, 3, 5, 7, 11 |
| 6. Ability to have procedures put in place to control access to protected information, whether it relates to the confidentiality of information or the confidentiality of proprietary processes. *– See Protection #6, #7 and #8* | Steps 2, 3, 4, 7, 8, 9, 11 | Steps 2, 3, 4, 5, 7, 8, 9, 11 |
| 7. Ability to create and manage the records documenting an organization’s information governance program, to ensure its structure, processes, and practices are transparent, understandable, and available as defined by organizational policies and jurisdictional laws (e.g., in time, appropriate requestors, etc.). *– See Accountability #3 and #4* | Steps 3, 11 | Steps 3, 11 |
| 8. Ability of an organization to ensure that stakeholders are made aware of how health information is created, acquired, collected, maintained, used, shared and disclosed.  *– See Availability ##1-9, #14 and #16* | Steps 3, 11 | Steps 3, 11 |
| 9. Ability to demonstrate transparency through clear descriptions of the uses and sharing of identified, de-identified and re-identified information on an individual, or aggregate healthcare information. – *See Availability ##1-9, #14 and #16; Protection #3* | Steps 3, 11 | Steps 3, 11 |

**HIM Practice Checklist: *<Name>* - TO BE DEVELOPED**

Business Requirement

List of Items by Actor, by Workflow Step

List of Documents/Records/Data by Actor, by Workflow Step

**Conformity Assessment: *<Name>* - TO BE DEVELOPED**

**References -- TO BE DEVELOPED**

Patent Registration Use Cases

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name: Patient Registration – Inpatient Admission Scheduled via Call or in Person & Admit** | | | |
| Actors | Business Actors: Patient, Referring/Ordering Physician, Scheduler, Insurance Verifier Registrar | | |
| Technical Actors: EHR system & Registration-Admission, Discharge and Transfer System(R-ADT) | | |
| # of Step | Workflow Steps | | Record, Documents and Data |
| **Scheduling** | | | |
| 1 | Scheduling includes one or more of the follow activities; pre-admission scheduling, physician referrals, physician ordered, or patient presents at hospital scheduling/admissions department to schedule admission. | | Pt demographics (name, DoB, address, Insurance ID)  Admission demographics (enterprise medical record number, attending physician name, date, time, service, admitting diagnosis, chief complaint, anticipated procedure) |
| 2 | Registration Staff - identifies patient and schedules the admission | |
| 3 | Registration staff queries patient about diagnosis and treatment, assigns codes for diagnosis and procedures | | ICD-10 CM & PCS codes |
| 4 | Registration Staff - validates patient information, verifies medical insurance coverage, requests insurance admission authorization | | insurance authorization number |
| **Patient Admission** | | | |
| 5 | Patient presents at hospital | |  |
| 6 | Registration staff asks patient to sign consents, acknowledgements, and authorizations, patient is given notices and information in accordance with policy. | | Notice of privacy practices, consent to treatment, admission agreement, consent directive, and advanced directive |
| 7 | Registration staff enters updated patient information and scans documents into EHR | | Updated medical record or encounter record? |
| 8 | Registration staff initiates either room assignment or bed assignment | | Updated medical record or encounter record? |
| Entry Condition | | EHR - registration | |
| Exit Condition | | EHR - triage | |
| Quality requirements | | Real time patient information verification | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name: Patient Registration – Inpatient Admission Un-Scheduled via Call or in Person & Admit** | | | |
| Actors | Business Actors: Patient, Primary Care Provider (PCP), Scheduler, Insurance Verifier Registrar | | |
| Technical Actors: EHR system, Patient Portal, | | |
| # of Step | Workflow Steps | | Record, Documents and Data |
| **Scheduling** | | | |
| 1 | Scheduling/Walk-in/Patient Presentation | | Pt demographics (name, DoB, address, Insurance ID)  Admission demographics (enterprise medical record number, attending physician name, date, time, service, admitting diagnosis, chief complaint, anticipated procedure) |
| 2 | Scheduler identifies patient and schedules the admission | |
| 3 | Registration staff queries patient about diagnosis and treatment, assigns codes for diagnosis and procedures | | ICD-10 CM & PCS codes |
| 4 | Registration staff validates patient information, verifies medical insurance coverage, requests insurance admission authorization | | insurance authorization number |
| **Patient Admission** | | | |
| 5 | Patient presents at hospital | |  |
| 6 | Medical Screening Exam(Non-scheduled) | |  |
| 7 | Registration staff asks patient to sign consents, acknowledgements, and authorizations, patient is given notices and information in accordance with policy | | Notice of privacy practices, consent to treatment, admission agreement, consent directive, and advanced directive |
| 8 | Registration staff enters updated patient information and scans documents into EHR | | Updated medical record or encounter record? |
| 9 | Registration staff initiates either room assignment or bed assignment | | Updated medical record or encounter record? |
| Entry Condition | | EHR - registration | |
| Exit Condition | | EHR - triage | |
| Quality requirements | | Real time patient information verification | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case Name: Patient Registration – Outpatient Visit Scheduled via Call or in Person** | | | | |
| Actors | Business Actors: Patient, Registrar Staff | | | |
| Technical Actors: EHR system, Patient Portal, mHealth application | | | |
| # of Step | Workflow Steps | | Record, Documents and Data | |
| **Scheduling** | | | | |
| 1 | Patient calls/comes to clinic to schedule a visit | | Pt demographics (name, DoB, address, Insurance ID)  Visit demographics (clinic name, provider name, date, time)  Reason for visit | |
| 2 | Registration staff schedules the visit | |
| 3 | Registration staff validates patient information and assembles record for the visit | | Same as above  New visit record is open | |
| **Patient Visit** | | | | |
| 4 | Patient comes to the clinic | |  | |
| 5 | Registration staff asks patient to complete medical summary information and consents | | Medical Summary , Consents | |
| 6 | Registration staff enters updated patient information and assembles record for the visit | | Updated visit record | |
| 7 | Registration staff sends visit record to clinician | | Updated visit record | |
| Entry Condition | | EHR - registration | |
| Exit Condition | | EHR - triage | |
| Quality reqs | | Real time patient information verification | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Use Case Name: Patient Registration – Outpatient Visit Scheduled Online** | | | | |
| Actors | Business Actors: Patient, Registrar Staff | | | |
| Technical Actors: EHR system, Patient Portal, mHealth application | | | |
| # of Step | Workflow Steps | | Record, Documents and Data | |
| 1 | Patient schedules visit using patient portal or mHealth application | | Pt demographics (name, DoB, address, Insurance ID)  Visit demographics (clinic name, provider name, date, time)  Reason for visit | |
| 2 | Registration staff is notified about scheduled visit completed via patient portal or mHealth application | | Notification about scheduled visit | |
| 3 | Registration staff validates patient information and send confirmation to patient regarding scheduled visit via patient portal or mHealth application | | New visit record is open  Confirmation about scheduled visit | |
| 4 | Patient comes to the clinic | |  | |
| 5 | Registration staff asks patient to complete medical summary information and consents | | Medical Summary , Consents | |
| 6 | Registration staff enters updated patient information and assembles record for the visit | | Updated visit record | |
| 7 | Registration staff sends visit record to clinician | | Updated visit record | |
| Entry Condition | | Patient Portal, mHealth application and EHR-registration | |
| Exit Condition | | EHR - triage | |
| Quality reqs | | Real time patient information verification | |

References

TBD

## Copy and Paste

Business Requirements

| Health Information Integrity (I): Business Requirements |
| --- |
| I-16. Ability to establish parameters for “enable / disable” capabilities for “copy and paste” in HIT product. |
| I-17. Ability to track “copy and paste” usage (e.g., via color coding, flags, notes, and/or using other visual identifiers), so information from a previous entry is identifiable and viewable in a subsequent entry, as well as presented in a complete chronological sequence within a single episode of care. This will include maintaining metadata on “copy and paste” usage in a data audit of the use of “copy and paste” function including the source, date, time, author of performing copy and paste. |

|  |
| --- |
| **Health Information Compliance: Business Requirements** |
| C-8. Ability to develop internal controls to monitor adherence to rules, regulations, and program requirements, thus assessing and ensuring compliance |

Sections that follow were developed based on the *AHIMA Copy Functionality Toolkit – A Practical Guide: Information Management and Governance of Copy Functions in Electronic Health Record Systems*. 2011. URL: <http://bok.ahima.org/doc?oid=105646>

Definitions

The term ***copy*** means any one of the following synonyms: copy and paste, cloning, copy forward, re-use, carry forward, and save note as a template and any intent to move documentation from one part of the record to another.

Actors

Copy and Paste

|  |  |
| --- | --- |
| **Actors** | **Roles** |
| Business Actors | |
| * Provider Administrative and Financial Systems | Systems used by healthcare provider that include administrative and financial functions associated with the delivery of healthcare. These functions support the delivery and optimization of care, but generally do not impact the direct care of an individual patient.  (Includes: Administrative and financial staff, Care coordinators,  Clinical support staff, Healthcare Entities, and Health Information Management (HIM) Personnel[[13]](#footnote-13) |
| * Patient | A living or deceased individual who is receiving or has received patient services.[[14]](#footnote-14) |
| *Secondary users* :   * health information management staff | Information management (capture, validation, retention, etc.) |
| * compliance staff | Staff responsible for monitoring the compliance process at a healthcare facility[[15]](#footnote-15) |
| * billing staff | Designated individual that is responsible for generating a bill for healthcare services performed. |
| * regulatory staff | Staff responsible for implementing and managing the programs instituted by state and federal statutes. |
| * legal & risk management staff | Staff responsible for monitoring, managing, and advising the organizations’ clients regarding risk and legal matters |
| * case manager | A nurse, doctor, or social worker who arranges all services that are needed to give proper healthcare to a patient or group of patients (CMS 2013)[[16]](#footnote-16) |
| Technical Actors | |
| Health Information System | An electronic record for health care providers to create, import, store, and use clinical information for patient care, according to nationally recognized interoperability standards.[[17]](#footnote-17) |
| Health Plan System | Systems used by health plans that include administrative and financial functions associated with the coverage and financing of healthcare for the health plan’s enrolled members. These functions include information regarding the individual’s enrollment, eligibility, coverage and benefits, authorizations, claims, care coordination and other information related to the member.[[18]](#footnote-18) |
| Electronic Health Record (EHR) | The Electronic Health Record (EHR) System is a secure, real-time, point-of-care, patient-centric information resource for clinicians.[[19]](#footnote-19) |
| Patient Portal | Information system that allows patient to log in to obtain information, register, and perform other functions.[[20]](#footnote-20) |
| Personal Health Record (PHR) System | A healthcare record system used to create, review, annotate and maintain records by the patient or the caregiver for a patient. The PHR may include any aspect(s) of the health condition, medications, medical problems, allergies, vaccination history, visit history or communications with healthcare providers.[[21]](#footnote-21) |
| mHealth Application | Mobile Health (mHealth) is an area of electronic health (eHealth) and it is the provision of health services and information via mobile technologies such as mobile phones and Personal Digital Assistants (PDAs)[[22]](#footnote-22) |

Problems

Problems (risks) to documentation integrity of using “copy and paste” capability include:

* Inaccurate or outdated information on the patient that may adversely impact patient care
* Information on the wrong patient that may adversely impact patient care
* Redundant information, which causes the inability to determine current information
* Inability to identify the author or intent of documentation
* Inability to identify when the documentation was first created
* Inability to accurately support or defend evaluation and management (E/M) coding for professional or technical billing notes
* Propagation of false information
* Internally inconsistent progress notes
* Unnecessarily lengthy progress notes

Solutions

Utilization of “copy and paste” capability in health information systems is based on:

* Organizational acceptable uses
* Operational processes and checklists
* Documentation guidelines – what are they?
* Responsibility – Which One?
* Auditing and reporting
* Sanctions

**Business Requirements #I-16 and #C-8**

Checklist: Ability to Establish Parameters for “Enable /Disable Copy & Paste” Action

* Define organizational policy for copy & paste action by
  + Specifying clinical documentation in which copy & paste action can be performed
  + Specifying actors (business and technical) responsible for performing copy & paste action
  + Specifying audit procedure and documentation for performed copy & paste action
  + Specifying training procedure for the personnel involved in performing and auditing copy & paste action

**Business Requirements #I-17and #C-8**

Checklist: Ability to Perform and Track “Copy and Paste” Usage by HIT Users

* Perform copy & paste action by
  + Coping necessary section(s) in the original document
  + Pasting necessary section(s) into the new document
  + Verifying copied/pasted section(s) between the original and new documents by providing electronic signature and date/time stamp of completed action
* Identify copy & paste action retrospectively by
  + Viewing highlighted copied text in the original document
  + Viewing highlighted pasted text in the new document
  + Identifying/tracking the identification numbers of the original and new documents
  + Identifying/tracking the actors (business and technical) of the original document
    - Business actor: name, role, signature
    - Technical actor: system name and ID
    - Date/time stamp when the original document was created
  + Identifying/tracking the actors (business and technical) who performed copy& paste action (name, role, signature) and where the action was performed
    - Business actor: name, role, signature
    - Technical actor: system name and ID
  + Identifying/tracking the date and time of the performed copy& paste action
    - date/time stamp
* Generate the audit log of copy & paste actions in real time by specifying
  + The name of actor performing the copy function
    - Business actor: name, role
    - Technical actor: system name and ID
  + What information was copied
  + The original document information was copied from
  + The new document where information was pasted to
  + Date/time when the action was performed

Scenarios

The following case scenarios demonstrate the appropriate use of copy & paste action.

**CASE SCENARIO 1**

*A 65-year-old woman is a direct admission from her primary care physician (PCP) for pneumonia. She is admitted to the hospital under the care of her PCP to a general medicine floor. The PCP documents an extensive history and physical examination in the HER and orders the appropriate tests. On day one of the hospital stay, the physician completes a progress note. On subsequent days two and three, the physician completes progress notes updating the patient’s progress and documents the results of all tests. On day four, the patient is discharged home. The PCP copies forward the chief complaint and physical examination from the progress note on day one. The PCP indicates that the information is copied by inserting quotation marks around the documentation and noting “copied from day 1 note.” He notes on the final progress which phrases have been copied forward and then adds new content underneath.*

**Result:** The physician appropriately used the copy functionality.

**CASE SCENARIO 2**

*Jane Doe presents to a hospital emergency room for a laceration. While washing dishes this 35-year-old female cut her hand on a knife in the dishwater. She presents to the ED, is triaged, and moved to examination room 1. Following evaluation from the physician, the patient receives 10 sutures with instructions to follow up in 10 days for suture removal. The physician documents his emergency room encounter for this visit, including a complete history and physical and system evaluation. In 10 days the patient returns with no complaints, and her sutures are removed. The physician examines the patient and finds no signs of infection and instructs the nurse to remove the stitches. The physician then pulls up his prior ED note, highlights the history and physical and system evaluation sections, and copies that information into the new visit history. The ED coder reviews the documentation and bills for a Level 5 ED visit.*

**Result:** The first visit was reported consistent with facility E/M guidelines. However, the second encounter was inappropriately reported at the same level as the first visit because the physician pulled forward documentation of services that were not actually performed on the second encounter. The ED coder could not determine that the documentation within the record was from a previous encounter.

**What should have happened?** If the physician utilized the copy functionality the physician should have noted the original source document and updated the note with the specific information from this encounter. System functionality would allow the user to confirm that the physician copied an entry. The ED coder would recognize the information that was pulled forward, and could then establish the ED level for the second encounter based appropriately on the services performed during that encounter only.

**CASE SCENARIO 3**

*A 55-year-old male is admitted through the emergency department of a large academic medical center following a motor vehicle accident. The patient is admitted to the intensive care unit for a left temporal bone fracture, left femur fracture, grade-2 spleen laceration, and multiple cuts and bruises. In the course of his hospital stay, the patient is followed by the trauma service, neurosurgery service, and orthopedic service, all of which have attending physicians, residents, and physician assistants in addition to medical students. The patient remains in ICU for five days before he is transferred out to the surgery unit to be followed by the trauma service. During his stay in ICU, the trauma medical student initiated daily progress notes for the trauma service, which were expanded upon by the trauma resident and physician assistant within the electronic record. Each progress note was then co-signed by the attending physician. The orthopedic medical student copied forward diagnostic information from the previous day’s documentation, added new documentation and then forwarded it to the orthopedic attending for co-signature. Both wrote new progress notes each day, which were signed by the attending physicians. The neurosurgery medical student used the copy functionality to copy the neurosurgery progress note from the previous day and add his follow up. The neurosurgery resident simply added his information below the medical student’s. The attending co-signed each note without noticing that the student had used copy functionality and selected a level of service based on the entire note.*

**Result:** The trauma service was writing new notes each day that were then co-signed by the attending service. No documentation issues were identified. The orthopedic service used copy functionality to bring forward diagnostic information only. In addition to this diagnostic information, the medical student and resident wrote different clinical information and updates. The orthopedic attending co-signed each note; therefore no documentation issues were identified. The neurosurgery service, however, used copy to pull forward information from the initial progress note, thus implying that the neurosurgery service was providing the same level of detail in the examination on subsequent visits as on the initial visit. If that is not in fact occurring, the neurosurgery service may be at risk for fraud related to the level of service.

**What should have happened?** The neurosurgery service should have indicated which information was pulled forward from previous notes and which information was new information. The attending physician is ultimately responsible for the progress notes within the patient record and should ensure that any resident utilizing copy functionalities has been adequately trained in a manner consistent with organizational policies

## Record or Data Quality

Business Requirements

**TO BE ADDED**

Sections that follow were developed based on Brenski A,Dickson B, Adhikari S, et.al. Principles of Documentation. Electronic Health Record. WHERE. February 29, 2012

Definitions

The **medical record** serves as the principal repository of data and information about health care services delivered to a patient. It is a tool in communication to all clinicians involved in the care of a patient. As such, documentation should be a concise depiction of patient acuity, services rendered, medical necessity and outcomes. This should include pertinent facts, findings and observations about a patient’s care delivery, providing a clear picture of services delivered. It is the responsibility of every individual documenting in the medical record to provide accurate, timely and appropriate documentation in the medical record. Principal functions of the medical record are:

1. A service **documentation** tool with information constituting a permanent account of the services a patient received during an established encounter whether virtual or in person.
2. A **communication** tool for all care providers with concise, complete and accurate information.
3. A **diagnostic** tool providing a consolidation of clinical information aiding the care provider in making informed decisions regarding the patient’s treatment plan.
4. A **patient safety** tool providing a means for the care provider to assess potential risks to a patient’s health and well being.
5. A **discharge planning** tool promoting appropriate follow up care upon discharge.

**Medical record quality** is ….

**Maintain medical record quality** is the ability to capture relevant information in a concise and complete manner while avoiding redundancy.

**Data quality** is …

**Maintain data quality** is the ability to….

Actors

|  |  |
| --- | --- |
| Actors | Roles |
| Business Actors | |
| *Primary users:*   * clinical care professionals | deliver direct patient care |
| * public health professionals | involved in direct patient care |
| *Secondary users* :   * health information management staff | information management (capture, validation, retention, etc.) |
| * compliance staff |  |
| * billing staff |  |
| * regulatory staff |  |
| * legal staff |  |
| * insurance carriers |  |
| * researchers | clinical research, healthcare services research, etc. |
| * public health professionals | public health surveillance, policy and assurance |
| Technical Actors | |
| Health Information System (HIS) |  |
| Electronic Health Record (EHR) |  |
| Laboratory Information Management System (LIMS) |  |
| Clinical Imaging Systems |  |
| Pharmacy Information Systems |  |
| Public Health Information Systems |  |
| Patient Portal |  |
| mHealth Application |  |

Problems

Today, both HIM professionals and clinicians have been experiencing overwhelming challenges with usability of the electronic health records (EHR) systems due to shortcomings in supporting user needs.[[23]](#footnote-23),[[24]](#footnote-24),[[25]](#footnote-25),[[26]](#footnote-26), A five-year study recently published by the US National Institute of Standards and Technology (NIST), on usability of EHR systems[[27]](#footnote-27) identified the following four issues with adoption that may negatively impact patient safety:

1. Clinically relevant information is not available at the task at hand
2. Inadequate documentation
3. Inaccurate information and
4. Irretrievable information.

Solutions

The overall HIM Quality Use Case is focused addressing challenges ##2-3 identified in the NIST report. It consists of two use cases:

1. Use Case 1: Maintaining adequate documentation (record quality) and
2. Use Case 2: Maintaining accurate information (data quality).

Both use cases are focused on the communication between HIM professionals and clinicians addressing documentation (record) and data quality concerns. These concerns include:

**Business Requirements #I-16 and #C-8**

Checklist: Ability to Maintain Record Quality

***Patient registration??***

***Original Entries***

1. All entries in the medical record should be made as soon as possible after the observation, discussion or event, and should indicate the actual date and time of the observation, discussion, or event.
2. Entries in the medical record should primarily include information which the provider has obtained directly from the patient, family member, caregiver, or outside medical records
3. Entries need to be specific, factual, and objective, but may contain subjective interpretations.
4. Entries documenting any patient encounter should accurately reflect the patient’s condition at that time.
5. Other patients’ names should not be referenced in another’s record.
6. The use of abbreviations should be minimized and restricted to those on the approved abbreviation list. Dangerous abbreviations should not be used. (See dangerous abbreviations list).
7. Links that pull patient data should only be included when clinically relevant to that encounter.
8. The provider authenticating the note is responsible for the accuracy of the data contained in the note.

***Late entries, clarifications and addenda***

1. Late entries, clarifications and addenda are permissible but must be clearly indicated as such at the beginning of the documentation. These entries must include the date and time the entry was entered into the record and not when the entry should have been made.
2. Changes in the patient’s condition and treatment plan need to be documented and provide evidence of follow through regarding patient stability or problem resolution.
3. Relevant communications and attempts at communication with the patient’s family and / or other care providers should be documented.

***Other providers’ information***

1. Other providers’ information may be used but must be appropriately referenced.

***Consent***

1. The process of informed consent for procedures and treatment must be documented in the record and should include details of risks, benefits, alternatives, and consequences of no treatment.
2. The process of informed consent for information sharing with primary users (other providers involved in direct care) and secondary users must be documented in the record and should include details of risks, benefits, alternatives, and consequences of non-sharing of information.

***Discharge Summary***

1. The patient’s discharge summary should contain a concise summary of patient’s illness, treatment provided, response to treatment, condition at discharge, final diagnoses, and discharge instructions.

**Business Requirements #I-16 and #C-8**

Checklist: Ability to Maintain Data Quality

1. Data entry has to be done*….*
2. Copying information (e.g. copy and paste, pull forward) from one section of the medical record to another has inherent risks for medical errors which should be recognized by all providers.

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## Patient Matching

Business Requirements

**TO BE ADDED**

Sections that follow were developed based on ….

Definitions

TBD

Actors (business, technical)

TBD

Problems

TBD

Solutions

TBD

HIM Checklist

TBD

HIM Use Case

TBD

References

TBD

## Transition of Care

Business Requirements

**TO BE ADDED**

Sections that follow were developed based on the Health Information Technology Standars panel (HITSP) Interoperability Specification (IS) 09. Consultations and Transfer of Care. URL: <http://www.hitsp.org/InteroperabilitySet_Details.aspx?MasterIS=true&InteroperabilityId=362&PrefixAlpha=1&APrefix=IS&PrefixNumeric=09>

Definitions

TBD

Actors (business, technical)

TBD

Problems

TBD

Solutions

TBD

HIM Checklist

TBD

HIM Use Case

TBD

References

TBD

# Conformity Assessment

# Appendix 1. Glossary of Terms

# Appendix 2. HIM Roles and Actor List

Table A: Roles of HIM Professionals in Healthcare Organizations[[28]](#footnote-28)

|  |  |  |  |
| --- | --- | --- | --- |
| HIM Roles | | | |
| Data Capture, Validation, and Maintenance | | | |
| Chart correction analyst | | Data architect | ICD-10 implementation specialist |
| Classification editor and exchange expert | | Data capture design specialist | Information workflow designer |
| Clinical coding validator | | Data dictionary manager | Patient identity manager |
| Clinical content manager | | Data integrity and transition specialist/auditor | Registrar (birth, cancer, device, bone marrow, tissue) |
| Clinical documentation improvement specialist/supervisor | | Data mapper/translator | Research coordinator/associate |
| Coder | | Data quality manager/analyst | Research data abstractor |
| Coding compliance coordinator/supervisor/manager | | Documentations/EHR trainer | Terminology asset manager |
| Computer-assisted coding validation practice leader | | EHR content manager | Voice capture specialist |
| Privacy Officer | | Enterprise patient master index, data integrity analyst |  |
| Data/Information Analysis, Decision Support and Informatics | | | |
| Business analyst/data analyst | Data integration manager/analyst | | Decision support officer |
| Claims data analyst | Data integrity and transactions specialist/auditor | | Health data analyst/manager/director |
| Clinical content analyst | Data quality manager/analyst | | Health data statistician |
| Data abstractor/coordinator | Data repository architect/manager/analyst | | Health outcomes analyst |
| Data architect | Decision support analyst | | Health data quality engineer |
| **Emerging Roles** | | | |
|  |  | |  |
|  |  | |  |

The emerging roles for HIM professionals in the new interoperable electronic data sharing environment include Standards setters, Standards developers, Educators, Chief information governance officers, Consumer information advocates, Brokers of information.– ADD THE EMERGING ROLES INTO THE TABLE ABOVE

**Table B: Business and Technical Actors involved in HIM**

– Replace with updated description of the roles from the Pt Reg Use Case.

|  |  |
| --- | --- |
| **Actors** | **Roles** |
| **Business Actors** | |
| *Primary users:*   * clinical care professionals | Staff responsible for deliver direct patient care |
| * public health professionals | Infection control staff involved in direct patient care |
| * patient or care giver | ADD DEFINITION |
| *Secondary users* :   * HIM professionals | Staff responsible for ensuring the availability, integrity, protection, retention, transparency, compliance, accountability and disposition of information that is needed to deliver healthcare and population health services and to make appropriate healthcare and health promotion-related decisions. See Appendix 2 for current roles and emerging roles of HIM professionals in healthcare organizations.[[29]](#footnote-29)[[30]](#footnote-30) [[31]](#footnote-31) |
| * registration staff | Staff responsible for registering patients[[32]](#footnote-32) |
| * compliance staff | Staff responsible for monitoring the compliance process at a healthcare facility[[33]](#footnote-33) |
| * billing staff | Staff responsible for generating a bill for healthcare services performed |
| * regulatory staff | Staff responsible for implementing and managing the programs instituted by state and federal statutes |
| * legal & risk management staff | Staff responsible for monitoring, managing, and advising the organizations’ clients regarding risk and legal matters |
| * payor | Entities involved in paying for medical care |
| * researchers | A researcher is someone who conducts, i.e., an organized and systematic investigation into something. Scientists are often described as researchers. clinical research, healthcare services research, etc[[34]](#footnote-34) |
| Technical Actors | |
| Registration –Admission, Discharge, and Transfer (R-ADT) System | A type of administrative information systems that stores demographic information and performs functionality related to registration, admission, discharge, and transfer of patients within the organization.[[35]](#footnote-35) |
| Health Information System (HIS) | Information systems use in healthcare to support care delivery. They include EHR, lab, pharmacy, financial, and administrative. These functions support the delivery and optimization of care, but generally do not impact the direct care of an individual patient. |
| Electronic Document Management System | Software consisting of many component technologies that enable healthcare businesses to use documents to achieve significant improvements in work processes.[[36]](#footnote-36) |
| Financial System | Information systems used by healthcare provider that perform administrative and financial transactions associated with the delivery of healthcare. |
| Payor System | Systems used by health plans that include administrative and financial functions associated with the coverage and financing of healthcare for the health plan’s enrolled members. These functions include information regarding the individual’s enrollment, eligibility, coverage and benefits, authorizations, claims, care coordination and other information related to the member. |
| Electronic Health Record (EHR) | An electronic record of health-related information on an individual that conforms with nationally recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one healthcare organization[[37]](#footnote-37) |
| Personal Health Record (PHR) System | A healthcare record system used to create, review, annotate and maintain records by the patient or the caregiver for a patient. The PHR may include any aspect(s) of the health condition, medications, medical problems, allergies, vaccination history, visit history or communications with healthcare providers.[[38]](#footnote-38) |
| Laboratory Information Systems (LIS) | ADD DEFINITION |
| Laboratory Information Management System (LIMS) | ADD DEFINITION |
| Diagnostic Imaging System | A system that creates visual representations of the interior of a body for clinical analysis and medical intervention, as well as visual representation of the function of some organs or tissues (physiology). Medical imaging seeks to reveal internal structures hidden by the skin and bones, as well as to diagnose and treat disease.[[39]](#footnote-39) |
| Pharmacy Information System | An application used by Pharmacy to manage fulfillment of prescriptions, claims processing and other administrative functions[[40]](#footnote-40) |
| Public Health Information Systems | Local, state and federal information systems that support public health operation at the various levels of government |
| Health Information Exchange (HIE) | The exchange of health information electronically between providers and others with the same level of interoperability, such as labs and pharmacies[[41]](#footnote-41) |
| Mobile Health Application | Mobile Health (mHealth) application is a portable device (including but not limiting to mobile phones, Personal Digital Assistants (PDAs) and other) that allow access to patient information across various information systems. |

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