Procurement of an EHR solution with adjacent systems and services

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Invitation to Dialogue

Appendix C5 HL7 EHR-S Functional Model R2

Case number: 2016/238

History

Version	Responsibility	Date	Comments/Changes
v1.0	Helseplattformen	02.02.2017	Version v1.0 sent to the Contractors

1 THE CUSTOMER'S USE OF THE HL7 EHR-S FUNCTIONAL MODEL, RELEASE 2

This Appendix contains the HL7 Electronic Health Records System (EHR-S) Functional Model, Release 2, which the Customer has used to define the ICT functionalities that the EHR solution must include.

The Contractor should note that the Customer has chosen not to create Functional Profiles, but to relate the EHR-S FM functions to the enterprise capabilities and the areas of particular focus to Helseplattformen. The Customers' additional requirements are not constructed in the same rigorous way as the EHR-S FM conformance criteria. The Customer has nevertheless obtained some inspiration from the syntax and language used in the EHR-S FM conformance criteria when developing additional requirements, however this is not been carried out completely.

When the Customer refers to the HL7 EHR-S FM conformance criteria in the requirements table, the requirements are expressed with different levels of importance, overriding the HL7 EHR-S Functional Model's SHALL/SHOULD/MAY keyword.

ANSI/HL7 EHR, R2-2014
4/21/2014
(revision of ANSI/HL7 EHR, R1-2007)

HL7 EHR-System Functional Model, Release 2

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Health Informatics — HL7 Electronic Health Records-System Functional Model, Release 2

Informatic de santé — Modele fontionnel d'un systeme d'enreistrement de la santé HL7, version 2

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 10781 was prepared by Technical Committee ISO/TC 215, *Health Informatics*, WG 1.

This second edition cancels and replaces the first edition (ISO 10781:2009(E)), the description of the conformance criteria, the function list and the the annexes of which have been technically revised.

Introduction

Health Informatics — HL7 Electronic Health Records-System Functional Model, Release 2

0.1 Notes to Readers

EHR System Functional Model Release 2.0 is based on a series of predecessors, starting in 2004 with the release of the first consensus Draft Standard, followed in 2007 by Release 1, then in 2009 with Release 1.1, jointly balloted with ISO TC215 and CEN TC251. Release 2.0 reflects many changes—including ballot comments that had been made on past ballots and where the HL7 EHR Work Group had committed to bringing consideration of requested changes forward. It also includes comments that were considered for future use from the ISO ballot of 2009 as well as considerations of the Comment Only ballot that was circulated in May, 2011.

Other inclusions were made as a result of the multiple EHR System Functional Profiles that have been written on Functional Model Releases 1 and 1.1. There was great learning in those various domain as well as companion profiles. The EHR-S FM also incorporated two other Draft Standards for Trial Use: HL7 EHR Lifecycle Model and HL7 EHR Interoperability Model.

0.2 Changes from Previous Release

The HL7 EHR-System Functional Model Release 2 had its first normative ballot in May, 2012. Some of the key changes as a result of the first normative ballot included:

- Moved the normative parts of the Glossary into the Conformance clause section as use of glossary consistently is key to ease in reading and understanding the model.
- Improved consistency in representation of Headers, Functions and Conformance Criteria throughout the model.
- Updated the conformance clause for ease of reading especially as it related to the different types of profiles: domain profiles and companion profiles.
- Provided clarity for functional description and related conformance criteria.
- Updated the content to be more current.

To see all of the comments and reconciliation of the Normative 1 ballot, please see the HL7 Ballot Website for the ballot cycle of May 2012.

0.3 Background

0.3.1 What are Electronic Health Record Systems?

The effective use of information technology is a key focal point for improving healthcare in terms of patient safety, quality outcomes, and economic efficiency. A series of reports from the U.S. Institute of Medicine (IOM) identifies a crisis of "system" failure and calls for "system" transformation enabled by the use of information technology. Such a change is possible by "an infrastructure that permits fully interconnected, universal, secure network of systems that can deliver information for patient care anytime, anywhere."(HHS Goals in “Pursuing HL7 EHR Functional Standard" in Memorandum to HIMSS from C. Clancy and W. Raub co-chairs of HHS Council on the Application of Health Information Technology, dated November 12, 2003.) A critical foundational component for resolving these system and infrastructure issues is the Electronic Health Record System (EHR-S).

In developing this EHR-S Functional Model, HL7 relied on three well-accepted definitions: two provided by the U.S. Institute of Medicine and one developed by the European Committee for Standardization/ Comité Européen de Normalisation (CEN). This Functional Model leverages these existing EHR-S definitions and does not attempt to create a redundant definition of an EHR-S.

0.3.2 Existing EHR System Definitions

The IOM's 1991 report, The Computer-Based Patient Record: An Essential Technology, and updated in 1997 (Dick, R.S, Steen, E.B., & Detmer, D.E. (Editors), National Academy Press: Washington, DC) defined an EHR System as:

- The set of components that form the mechanism by which patient records are created, used, stored, and retrieved.
- A patient record system is usually located within a health care provider setting. It includes people, data, rules and procedures, processing and storage devices (e.g., paper and pen, hardware and software), and communication and support facilities.
- The 2003 IOM Letter Report, Key Capabilities of an Electronic Health Record System, defined the EHR System as including:
- Longitudinal collection of electronic health information for and about persons, where health information is defined as information pertaining to the health of an individual or health care provided to an individual.
- Immediate electronic access to person- and population-level information by authorized, and only authorized, users.
- Provision of knowledge and decision-support that enhance the quality, safety, and efficiency of patient care.
- Support of efficient processes for health care delivery.
- The 2003 ISO/TS 18308 references the IOM 1991 definition above as well as CEN 13606, 2000:
- A system for recording, retrieving and manipulating information in electronic health records.

0.3.3 How were the Functions Identified and Developed?

To achieve healthcare community consensus at the outset, the functions are described at a conceptual level, providing a robust foundation for a more detailed work. Functions were included if considered essential in at least one care setting. Written in user-oriented language, the document is intended for a broad readership.

Functional Granularity is a term used to describe the level of abstraction at which a function is represented. Functions that are commonly grouped together in practice or by major systems have been consolidated where appropriate; functions requiring extra or separate language or involving different workflows have been kept separate where appropriate. For example, decision support is maintained as a separate section, but mapped to other key sections, to indicate the "smart" function behind an action. All of the functions could be expanded into more granular elements but a balance between a usable document and an unwieldy list of functions has been agreed upon. The goal of determining an appropriate level of functional granularity at this time is to present functions that can be easily selected and used by readers of this standard, but that are not so abstract that readers would need to create a large number of additional functions within each function.

Although the determination of functional granularity is a relatively subjective task, systematic evaluation of each function by diverse groups of industry professionals has resulted in a level of granularity appropriate for this EHR-S Functional Model. Every attempt has been made to provide supporting information in the functional descriptions to illustrate the more granular aspects of functions that may have been consolidated for usability purposes.

Keeping with the intent of this EHR-S Functional Model to be independent with regard to technology or implementation strategy, no specific technology has been included in the functions, but may be used in the examples to illustrate the functions. Inclusion of specific technologies in the examples does not endorse or support the use of those technologies as implementation strategies.

Drafts of the EHR-S Functional Model and of specific functions have been widely reviewed by healthcare providers, vendors, and other stakeholders. This proposed standard reflects input from all these reviewers.

1 Scope

The HL7 EHR System Functional Model provides a reference list of functions that may be present in an Electronic Health Record System (EHR-S). The function list is described from a user perspective with the intent to enable consistent expression of system functionality. This EHR-S Functional Model, through the creation of Functional Profiles for care settings and realms, enables a standardized description and common understanding of functions sought or available in a given setting (e.g., intensive care, cardiology, office practice in one country or primary care in another country).

1.1 EHR-S Functional Model Scope

The HL7 EHR-S Functional Model defines a standardized model of the functions that may be present in EHR Systems. From the outset, a clear distinction between the EHR as a singular entity and systems that operate on the EHR – i.e., EHR Systems is critical. Section 1.1.3 describes the basis and foundation for the HL7 definition of an EHR System. Notably, the EHR-S Functional Model does not address whether the EHR-S is a system-of-systems or a single system providing the functions required by the users. This standard makes no distinction regarding implementation - the EHR-S described in a Functional Profile may be a single system or a system of systems. Within the normative sections of the Functional Model, the term "system" is used generically to cover the continuum of implementation options. This includes "core" healthcare functionality, typically provided by healthcare-specific applications that manage electronic healthcare information. It also includes associated generic application-level capabilities that are typically provided by middleware or other infrastructure components. The latter includes interoperability and integration capabilities such as location discovery and such areas as cross application workflow. Interoperability is considered both from semantic (clear, consistent and persistent communication of meaning) and technical (format, syntax and physical connectivity) viewpoints. Further, the functions make no statement about which technology is used, or about the content of the electronic health record. The specifics of 'how' EHR systems are developed or implemented is not considered to be within the scope of this model now or in the future. This EHR-S Functional Model does not address or endorse implementations or technology, nor does it include the data content of the electronic health record.

Finally, the EHR-S Functional Model supports research needs by ensuring that the data available to researchers follow the required protocols for privacy, confidentiality, and security. The diversity of research needs precludes the specific listing of functions that are potentially useful for research.
This Functional Model is not:

- a messaging specification
- an implementation specification
- a conformance specification
- an EHR specification
- a conformance or conformance testing metric
- an exercise in creating a definition for an EHR or EHR-S

The EHR-S Functional Model is not sufficient to provide a longitudinal health record; however, it will contribute to its development. The information exchange enabled by the EHR-S supports the population of clinical documents, event summaries, minimum data sets, claims attachments, and in the future will enable a longitudinal health record.

Additionally, it is important to note that the EHR-S Function Model does not include a discussion of clinical processes or the interaction of the healthcare actors. However, ISO13940 System of Concepts to Support Continuity of Care is an international standard that does outline key principles and processes in the provision of healthcare. We would highly recommend that users of the EHR-S FM refer to this standard for clinical processes that EHR systems support.

This EHR-S Functional Model package includes both Reference and Normative sections.

Status	Description
Reference	Content of the EHR-S Functional Model Package that contains information which clarifies concepts or otherwise provides additional information to aid understanding and comprehension. Reference material is not balloted as part of the standard.
Normative	Content that is part of the EHR-S Functional Model which HL7 committee members and interested industry participants have formally reviewed and balloted following the HL7 procedures for Balloting Normative Documents. This HL7 developed Functional Model document has been successfully balloted as a normative standard by the HL7 organization.

Table 1: Normative Status Types

Each section within this document is clearly labeled "Normative" if it is normative. For example, in section 5 (Overview), sections 5.2 and 5.3 are normative. In section 7, Conformance Clause; sections 7.1 through 7.6 are normative.

In the external Annex A, Function List, the Function ID, Function Name, Function Statement, and Conformance Criteria components are Normative in this Functional Model.

2 Normative References

The following referenced documents are indispensable for the application of this document.

- ASTM E1769:1995, Standard guide for properties of electronic health records and record systems
- CPRI, 1996b, Guidelines for managing information security programs at Organizations using computer-based patient record systems
- Health Information Management Technology: An Applied Approach. Merida L. Johns, PhD, RHIA, Editor, AHIMA, Chicago, IL, 2007
- ISO 18308:2011, Health Informatics – Requirements for an electronic health record architecture
- ISO/IEC 2382-8:1998, Information technology – vocabulary – part 8: security
- ISO/TS 17090-1:2002, Health informatics – public key infrastructure – part 1: framework and overview
- ISO/TS 13606-4:2009, Health informatics – electronic health record communication – part 4: security
- ISO/TR 12773-1:2009, Business requirements for health summary records – part 1: requirements

3 Terms and Definitions

3.1 access control
a means of ensuring that the resources of a data processing system can be accessed only by authorized entities in authorized ways

3.2 base functional profile
an existing domain or companion functional profile from which new functional profiles are created/derived

3.3 conformance
the fulfillment of a product, process, or service of specified requirements

3.4 conformance criteria
requirements indicating the behavior, action, capability that constitutes implementation of the function

3.5 conformance clause
a section of a specification that defines the requirements, criteria, or conditions to be satisfied in order to claim conformance

3.6 conformance statement
a description of the function in an EHR system that have been implemented. It reflects the degree to which an EHR system has met the functionality has met the functional profile's requirements and may include optional functions and information

3.7 derived functional profile
a functional domain or companion profile that is created from a base functional profile, (i.e., child functional domain profile to children's hospital domain profile)

3.8 Extension
the ability for an EHR-S to incorporate additional functionality beyond what is defined in the Functional Profile

3.9 functional profile
a subset of the Functional Model, in which functions have been designated (sometimes in varying degrees) for certain EHR systems or healthcare delivery settings or narrow operation requirements

3.10 informative functional profile
a registered functional profile that has successfully completed formal public scrutiny via the HL7 consensus process

3.11 inherited criterion
all the conformance criteria listed in a parent function will be inherited by all its children functions

3.12 registered functional profile
a functional profile that has successfully completed HL7 EHR Work Group registration process and review

3.13 situational criterion
criterion that is required if the circumstances given are applicable (IF/Then or Dependent SHALL)

4 Overview and Definition of the Functional Model (Normative)

The EHR-S Functional Model is composed of a list of functions, known as the Function List, which is divided into seven sections: Overarching, Care Provision, Care Provision Support, Population Health Support, administrative Support, Record Infrastructure and Trust Infrastructure.

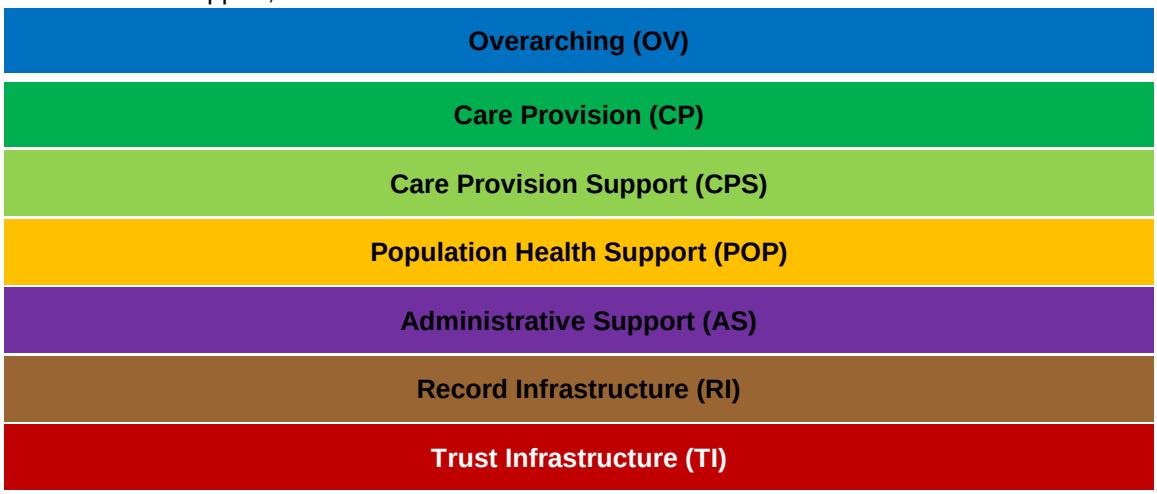

Figure 1: Function List Sections

Within the seven Sections of the Functional List the functions are grouped under header functions which each have one or more sub-functions in a hierarchical structure.

4.1 Sections of the Function List

The seven sections of the function list reflect content of the Interoperability Model, now integrated in the Functional Model, and input from several profiles if the R.1.1 version of the Functional Model. Below is a summary description of each of the seven sections:

- Overarching: The Overarching Section contains Conformance Criteria that apply to all EHR Systems and consequently must be included in all EHR-S FM compliant profiles.
- Care Provision: The Care Provision Section contains those functions and supporting Conformance Criteria that are required to provide direct care to a specific patient and enable hands-on delivery of healthcare. The functions are general and are not limited to a specific care setting and may be applied as part of an Electronic Health Record supporting healthcare offices, clinics, hospitals and specialty care centers.–
- Care Provision Support: The Care Provision Support Section focuses on functions needed to enable the provision of care This section is organized generally in alignment with Care Provision Section. For example, CP.4 (Manage Orders) is supported directly by CPS.4 (Support Orders).
- Population Health Support: The Population Health Support Section focuses on those functions required of the EHR to support the prevention and control of disease among a group of people (as opposed to the direct care of a single patient. This section includes functions to support input to systems that perform medical research, promote public health, & improve the quality of care at a multi-patient level
- Administrative Support: The Administrative Support Section focuses on functions required in the EHR-S to enable the management of the clinical practice and to assist with the administrative and financial operations. This includes management of resources, workflow and communication with patients and providers as well as the management of non-clinical administrative information on patients and providers.
- Record Infrastructure: The Record Infrastructure Chapter consists of functions common to EHR System record management, particularly those functions foundational to managing record lifecycle (origination, attestation, amendment, access/use, translation, transmittal/disclosure, receipt, de-identification, archive…) and record lifespan (persistence, indelibility, continuity, audit, encryption). RI functions are core and foundational to all other functions of the Model (CP, CPS, POP, AS).
- Trust Infrastructure: The Trust Infrastructure Chapter consists of functions common to an EHR System infrastructure, particularly those functions foundational to system operations, security, efficiency and data integrity assurance, safeguards for privacy and confidentiality, and interoperability with other systems. TI functions are core and foundational to all other functions of the Model (CP, CPS, POP, AS and RI).

4.2 Functional Profiles

While the Functional Model should contain all reasonably anticipated EHR-S functions, it is not itself intended as a list of all functions to be found in a specific EHR-S. Functional Profiles should be used to constrain the functions to an intended use. This document defines the Functional Model and describes the general use of profiles and priorities (See 1.4 Anticipated Uses).

In the aggregate, the Functional Model is intended to include the superset of functions from which a subset can be generated by the user. This subset created by the user illustrates what is needed within an EHR-S. Only a subset of the superset of functions will apply to any particular EHR-S Profile.

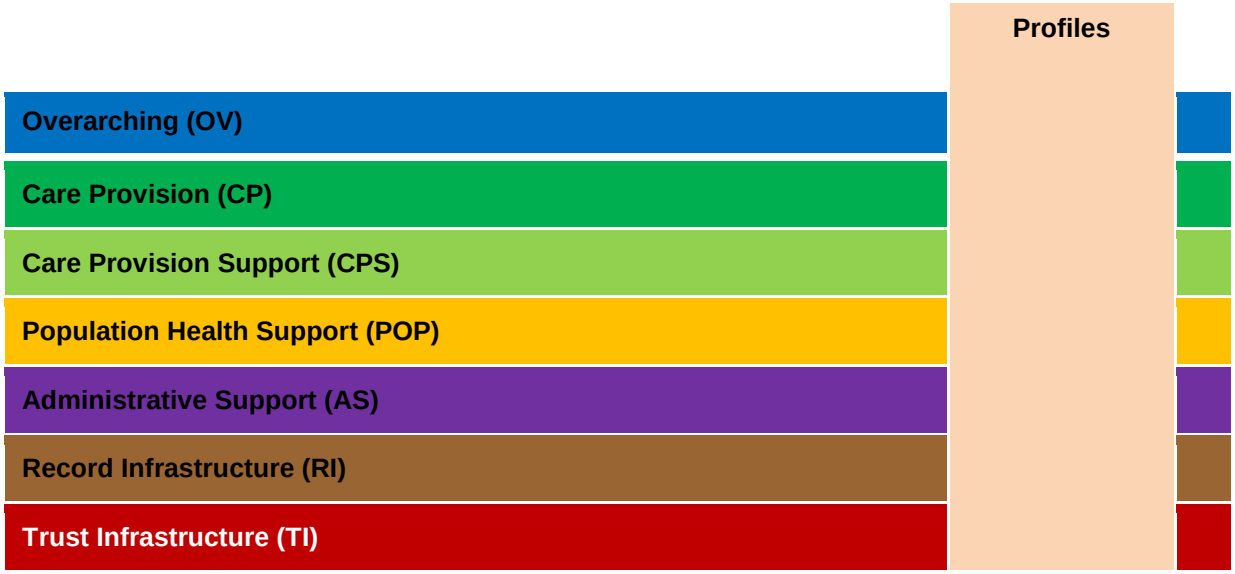

Figure 2. Profiling from the EHR-S FM.

Figure 2 shows that a profile would include all 7 sections of the Functional Model, however it may not be necessary to include all the functions and criteria within each section. A profile may include additional functions and criteria to meet the requirements of the profile.

The Conformance Clause is a high-level description of what is required of profiles and implementations. It, in turn, refers to other parts of the standard for details. The Conformance Clause describes concepts critical to the understanding and implementation of the Functional Model, such as: '*What is a profile?, What are Conformance Criteria? Or How do you know what is mandatory versus optional*?. A Conformance Clause can also provide a communication between the implementers (vendors) and users (buyers) as to what is required, and gives meaning to the phrases, "conforming profile" and "conforming EHR system". Additionally, it serves as the basis for testing and certification activities which may be performed by organizations external to HL7.
Refer to the Conformance Clause, section 7, for additional information related to the rules for selecting and adding Conformance Criteria in the development of a Functional Profile.

4.3 EHR-S Function List Components

The EHR-S Function List is a list (superset) of functions organized into discrete sections. Functions describe the behavior of a system in user-oriented language so as to be recognizable to the key stakeholders of an EHR-S.

EHR-S functions can be used to:

- Facilitate describing end user defined benefits such as patient safety, quality outcomes and cost efficiencies in terms of standard EHR-S functions.
- Promote a common understanding of EHR functions upon which developers, vendors, users and other interested parties can plan and evaluate EHR-S functions.
- Provide the necessary framework to drive the requirements and applications of next level standards, such as EHR content, coding, information models, constructs and interoperability for information portability between sub-systems of an EHR-S and across EHR-S'.
- Establish a standards-based method by which each realm (country) can apply these EHR functions to care settings, uses, and priorities.
- Inform those concerned with supporting subsequent use of data initially collected for the purpose of care (also known as "secondary use") on what functions can be expected in an EHR System.
- Inform those concerned with supporting realm-specific health information infrastructure on what functions can be expected in an EHR Systems.

Each function in the HL7 EHR-S Functional Model is identified and described using a set of elements or components as detailed below.

ID	Type	Name	Statement	Description	Conformance Criteria
CP.1	H	Manage Clinical History	Manage the patient's clinical history lists used to present summary or detailed information on patient health history.	Patient Clinical History lists are used to present succinct “snapshots” of critical health information including patient history; allergy intolerance and adverse reactions; medications; problems; strengths; immunizations; medical equipment/devices; and patient and family preferences.	
CP.1.4	F	Manage Problem List	Create and maintain patient- specific problem lists.	A problem list may include, but is not limited to chronic conditions, diagnoses, or symptoms, injury/poisoning (both intentional and unintentional), adverse effects of medical care (e.g., drugs, surgical), functional limitations, visit or stay-specific conditions, diagnoses, or symptoms…	
CP.1.4	C				1. The system SHALL provide the ability to manage, as discrete data, all active problems associated with a patient.
CP.1.4	C				2. The system SHALL capture and render a history of all problems associated with a patient.
CP.1.4	C				3. The system SHALL provide the ability to manage relevant dates including the onset date and resolution date of problem.

Table 2: Function List Example

4.3.1 Function ID (Normative)

This is the unique identifier of a function in the Function List (e.g., CP.1.1) and should be used to uniquely identify the function when referencing functions. The Function ID also serves to identify the section within which the function exists (CP = Care Provision Section) and the hierarchy or relationship between functions (CP.1.1 is at the same level as CP.1.2, CP.1.1 is also a parent of CP.1.1.1 and child of CP.1. In many cases the parent is fully expressed by the children. NOTE: For a detailed discussion and graphic of the parent and child relationship, see 6.6.1 Hierarchical Structure in Chapter 6, Conformance Clause.)

4.3.2 Function Type (Reference)

This is an indication of the line item as being a Header (H), Function (F) or Conformance Criteria (C). The Tag (T) is used to identify a new section in the spreadsheet and its related functions in the spreadsheet. A Tag has no directly associated Functions or Criteria.

4.3.3 Function Name (Normative)

This is the name of the Function and while expected to be unique within the Function List; it is not recommended to be used to identify the Function without being accompanied by the Function ID.

Example: Manage Medication List

4.3.4 Function Statement (Normative)

This is a brief statement of the purpose of this function. While not restricted to the use of structured language that is used in the Conformance Criteria (see below); the Statement should clearly identify the purpose and scope of the function.
Example: Create and maintain patient-specific medication lists.

4.3.5 Description (Reference)

This is a more detailed description of the function, including examples if needed.

Example: Medication lists are managed over time, whether over the course of a visit or stay, or the lifetime of a patient. All pertinent dates, including medication start, modification, and end dates are stored. The entire medication history for any medication, including alternative supplements and herbal medications, is viewable. Medication lists are not limited to medication orders recorded by providers, but may include, for example, pharmacy dispense/supply records, patient-reported medications and additional information such as age specific dosage.

4.3.6 Conformance Criteria (Normative)

Each function in the Function List includes one or more Conformance Criteria. Conformance Criteria, which exist as normative language in this standard, define the requirements for conforming to the function. The language used to express a conformance criterion is highly structured with standardized components with set meanings. The structured language used to define Conformance Criteria in the Function List are defined in the Conformance Chapter: Sections 2.4 Conformance Criteria and Section 2.9 Glossary Action Verb Hierarchy and Use.

5 Anticipated Uses (Reference)

HL7 is an international community and supports the development of Functional Profiles, which may be country specific (HL7 realm) specifications within a standard. It is anticipated that there will be profiles registered with HL7 that designate a subset of functions from the model for use in specific care settings (e.g. Behavioral Health) or functional areas (e.g. the Records Management and Evidentiary Support EHR). Examples of functional profiles will be included as reference documents in the HL7 How-to Guide for Creating Functional Profiles

5.1 Anticipated Development Approach: Functional Profiles

A “Functional Profile" is a selected set of functions that are applicable for a particular purpose, user, care setting, domain, etcetera. Functional profiles help to manage the master list of functions. The full Functional Model is not intended to apply to any single EHR-S implementation.

As such, an EHR system does not conform directly to the Functional Model; rather, it conforms to one or more Functional Profiles. For more information about creating, registering, and balloting Functional Profiles, see Chapter Two: Conformance Clause, Sections 2 and 6.

Functional profiles are the expression of usable subsets of functions from this EHR-S Functional Model. In this EHR-S Functional Model the reader will see a long list of Function Names and Function Statements, which serve as reasonable representations of functions that may be needed for a clinical environment. The list of functions is not intended to be used in its entirety. For example, the functions outlined in this model apply differently to different care settings. Many of the functions in the model apply to a nursing home setting, but some like CP.1.7.2.3 (Manage Orders for Blood Products and Other Biologics) would not apply. The list of functions is not considered to be in a usable form until a Functional Profile or constraint is generated.

The act of creating a Functional Profile is to support a business case for EHR-S use by selecting an applicable subset of functions from the EHR-S Functional Model list of functions, in effect constraining the model to meet specific requirements. For example, a Functional Profile may be created by a purchaser, to indicate requirements; by a vendor, to indicate the capability of specific products; or by any person/entity wishing to stipulate a desired subset of functions for a particular purpose, including a care setting within a specific realm. Once an applicable subset of functions has been selected, the person/entity creating the profile gives each function a priority of essential now, essential future or optional. For more information about the steps to creating a Functional Profile, see the HL7 *How-to Guide for Creating Functional Profiles and Related Tooling*.
Readers may wish to focus on the specific section of the EHR-S Functional Model that is more relevant for their everyday work. For example, a clinician might read the Care Provision and Care Provision Support sections very closely, while technical specialists might focus especially on the Trust Infrastructure section. Within an

organization, it might be helpful to delegate responsibility for scrutinizing the different sections among staff with different responsibilities and expertise.

Three vignettes are included here to help readers in different positions or organizations envision how they would study, and ultimately utilize the EHR-S Functional Model.

5.1.1 Scenario 1 – Group Practice

Dr. Smith is part of a 50-person group practice. The practice currently has a clinical information system that provides billing, scheduling, and other administrative support. For several reasons, it will need to be upgraded or replaced within 2 years. It does not include electronic health records. Dr. Smith and interested colleagues review an Ambulatory Care registered profile to see how the use setting and scenario illustrate the EHR functions related to their practice; they look at the Ambulatory Care prioritization of the individual functions that a group of experts working with HL7 have identified. With a good understanding of what the EHR functions would mean for their practice, Dr. Smith and several other providers then focus on the Care Provision and Care Provision Support sections, while clinic administration staff look at the Administrative Support section, while the technical support staff look at the Trust Infrastructure section. They all meet to discuss their conclusions. They plan to use the list of functions in discussions with vendors about their next IT system, recognizing that some functions may not yet be available.

5.1.2 Scenario 2 - Hospital

Mr. Jones is the Chief Informatics Officer in a large hospital organization Their IT system was installed two years ago and includes patient tracking and ordering components; it was upgraded for compliance with the United States HIPAA (Health Insurance Portability and Accountability Act). It does not include clinical decision support, performance monitoring, or public health reporting. Mr. Jones asks the Chief Medical Officer to organize a review of the HL7 EHR-S Functional Model while his team also reviews it. They both begin by looking at an Acute Care balloted profile to see how a group of experts working with HL7 have identified how an EHR-S could be used within a hospital. The scenario and prioritization of the individual functions is helpful. The CMO and several doctors and senior nurses review the Care Provision and Care Provision Support sections of the EHR-S Functional Model Acute Care profile; the CIO and his team focus on the Trust Infrastructure section but also look at the Care Provision and Care Provision Support sections. A small team of providers and IT staff meet to discuss their conclusions. They plan to use the list of functions in discussions with vendors about adding decision support, performance monitoring, and public health reporting to their existing system, recognizing that their budget will only allow very limited expansion in the near term.

5.1.3 Scenario 3 - IT Vendor

Ms. Green is the head of the clinical systems division of a large health IT company. Their product line includes both dedicated EHR systems and integrated systems that include an EHR. Their EHR and integrated systems have some decision support for medication ordering, but no performance monitoring/reporting functions. While most of their clients are larger provider organizations and hospitals, they are planning to expand into the small practice and home health markets with a simple, less expensive clinical system. In anticipation of HHS's implementation of the Medicare Reform law, which provides financial incentives for providers who use IT to track patients, the company wants to add a range of functionality to its products that would meet or exceed the Medicare requirements. Ms. Green asks her staff to review the entire HL7 EHR-S Functional Model package, and also review the care setting profile examples included as exhibits in theHL7 *How-to Guide for Creating Functional Profiles and Related Tooling.* Based on the examples of care setting Functional Profiles, they determine that they could add a relatively small number of functions to various products to be able to offer superior products for current and future clients. They see value in the EHR-S Functional Model for their discussions with their clients about upgrades or new purchases.

5.2 Examples of Current Use

5.2.1 Functional Profile for Clinical Research based on the EHR-S FM

Below is the text of a November 2009 HL7 Press Release demonstrating industry use:

Ann Arbor, Michigan, U.S.A.–November 5, 2009– Health Level Seven® (HL7®), the global authority for interoperability and standards in healthcare information technology with members in 57 countries, today announced it has published the healthcare industry's first ANSI (American National Standards Institute)-approved standard that specifies the functional requirements for regulated clinical research in an electronic health record system (EHR-S). The HL7 EHR Clinical Research Functional Profile for EHR systems is based

upon the HL7 EHR Work Group's EHR System Functional Model Release 1, which is also an ANSI-approved American National Standard.

The EHR Clinical Research Functional Profile defines high-level requirements critical for using electronic health record data for regulated clinical research, and provides a roadmap for integrating the information environment that must support both the patient care and the downstream clinical research processes. According to Donald Mon, PhD, co-chair of the HL7 EHR Work Group and member of the HL7 Board of Directors, "This profile is an excellent demonstration of how important functional requirements for secondary data use, such as clinical research, can be integrated into the patient care work flow and documented in EHR systems." Pharmaceutical, biotechnology, clinical research technology vendor, healthcare technology vendor, and federal regulatory stakeholders from the United States and the European Union collaborated for two years to identify and address a broad list of data protection, regulatory and ethical research requirements. The EHR Clinical Research Functional Profile is also a resource for the Certification Commission for Healthcare Information Technology (CCHIT) Clinical Research Work Group as they define new clinical research certification criteria for EHR systems. This functional profile will be complemented by the EHR-Clinical Research interoperability specification, currently being developed by the Health Information Technology Standards Panel (HITSP). Additionally, Dr. Rebecca Kush, President and CEO of the Clinical Data Interchange Standards Consortium (CDISC), commented that "CDISC is pleased to be a collaborator and to contribute clinical research standards and eSource Data Interchange concepts towards these initiatives. The ultimate goal is to accelerate the pace at which research informs healthcare for the benefit of patients and this functional profile contributes to the achievement of that goal."

5.2.2 AHRQ Announces Children's Electronic Health Record Format

Below is an excerpt from a February, 2013 Press Release demonstrating industry use of the HL7 Child Health Functional Profile: http://www.ahrq.gov/news/newsroom/press-releases/2013/childehrpr.html

The benefits of electronic health records (EHRs) may become more widely available to children through an EHR format for children's health care announced today by the U.S. Department of Health and Human Services' Agency for Healthcare Research and Quality (AHRQ) and Centers for Medicare & Medicaid Services (CMS)…. use of EHRs continues to improve the quality and safety of health care in the United States, but many existing EHR systems are not tailored to capture or process health information about children. The EHR format for children's health care announced today includes recommendations for child-specific data elements such as vaccines and functionality that will enable EHR developers to broaden their products to include modules tailored to children's health of Pediatrics (AAP) and the American Academy of Family Physicians. The format is built on specifications from sources that include the Health Level Seven International (HL7®) EHR-S Functional Model, the HL7 Child Health Work Group's *Child Health Functional Profile*, and the HHS Health Resources and Services Administration's *Health IT for Children Toolbox.*

See the link below to access a copy of the "Children's EHR Format" http://healthit.ahrq.gov/childehrFormat

5.3 Linking clinical content descriptions to the EHR-S FM (Reference)

HL7 has ongoing initiatives to link clinical content descriptions to functions and criteria in the EHR-S FM. This clinical content linkage can be helpful input to developers of EHR-systems. Examples of these clinical content descriptions include the Domain Analysis Models (DAMs) and Detailed Clinical Models (DCMs). Each of these examples can be linked to applicable sections of the EHR-S FM For example, a Care Plan DAM which can be linked to a care planning functions in the Care Provision and Care Provision Support sections in the EHR-S FM.

At a more detailed level, the DCMs, can be linked to specific functions in the EHR-S FM or EHR-S Functional Profiles. For example, a DCM for the Apgar score can be linked to CP.3.1 Conduct Assessments and CPS 3.1 Support for Standard Assessments. Another example is using the DCM for blood pressure with CP.3.2 Manage Patient Clinical Measurements.

On the level of data elements, which can be specified in a DCM, or in a data table, the linkage to EHR-S FM is usually through an individual criterion. For example, CP.3.2 Manage Patient Clinical Measurements, for example criterion 'The system SHALL provide the ability to capture patient vital signs including blood pressure, temperature, heart rate, and respiratory rate, as discrete elements of structured or unstructured data.

Finally, similar to function T4 Standard Terminology and Terminology Services, a function could be created for DCM and DCM services. The work on this function could be considered for inclusion in the next version of the EHR-S FM.

6 Conformance Clause

6.1 Introduction (Reference)

The following is the EHR Work Group approved, Conformance Clause. As important background on conformance, please note the following:

- This Conformance Clause defines what it means to conform to the EHR-S Functional Model.
- Conformance to the Functional Model is defined for functional domain profiles, and for functional companion profiles. An EHR system does not directly conform to the Functional Model, rather it conforms to one or more Functional Profiles.
- Conformance criteria are associated with functions in the EHR-S Functional Model.
- This Conformance Clause does not specify testing or validation procedures to determine whether an EHR system conforms to a Functional Profile or whether a Functional Profile conforms to the EHR-S Functional Model.

6.2 Scope and Field of Application (Normative)

This Conformance Clause defines the minimum requirements for Functional Profiles claiming conformance to the EHR System Functional Model. It also identifies how EHR systems achieve conformance to the Functional Model, which is via the system's conformance to a particular functional domain profile, multiple Functional Profiles, or combination of domain and companion profiles. This clause specifies:

- The purpose, structure, and use of conformance criteria that are to be included in the Functional Model and conforming Functional Profiles,
- The rules for defining conforming Functional Profiles of the Functional Model,
- The relationship between Functional Profiles and EHR systems,
- Sample Conformance Clauses and use case scenarios,
- Guidance on the conformance requirements that a Functional Profile might levy on EHR systems,
- Guidance on the purpose and use of an EHR system Conformance Statement.

While the conformance requirements for Functional Profiles can be found in this clause, they necessarily reference the Functional Model and other sources.

This Conformance Clause does not specify testing or validation procedures to assess a Functional Profile's conformance to the Functional Model. It also does not specify testing or validation procedures to determine whether an EHR system conforms to a Functional Profile or matches its Conformance Statement.

6.3 Concepts (Normative)

6.3.1 Functional Profiles

Creating a Functional Profile is a method for defining subsets of the Functional Model. A Functional Profile is a specification which uses the Functional Model to indicate which functions are required, desired, or implemented for certain EHR systems, healthcare delivery settings, or for other purposes (e.g. profile for Records Management and Evidentiary Support EHR).

Functional Profiles can be created by healthcare community stakeholders with interest in using and/or providing a Functional Profile for an EHR system. Functional Profiles can represent the functionality required and desired for a care setting or application, or reflect the functionality incorporated in a vendor's EHR system.

(NOTE: During the process of creating a profile, it may be important to discuss clinical processes and/or the interaction of the healthcare actors. The international standard 'ISO13940 System of Concepts to Support Continuity of Care' provides an outline of key principles and processes in the provision of healthcare. We would highly recommend reviewing this standard as part of your work.)

Once a Functional Profile is defined it can be implemented by EHR systems or it may trigger the creation of derived Functional Profiles. A *derived Functional Profile* is a Functional Profile that is created from an existing Functional Profile, inheriting functions from the base (existing) Functional Profile.

There are two types of Functional Profiles. The Functional Domain Profile is the common type of profile used to describe an EHR system for use in one or more care settings, or to describe an EHR system for use in a selected realm to meet the rules, regulations and standards applicable for that realm. The Functional Companion Profile is a type of profile that must be paired with one or more Domain Profiles. The purpose of a Companion Profile is to add unique features to an EHR System, such as for research or for evidentiary support.

For example, many EHR systems in a clinic environment do not need to support clinical research. But for a clinic that was supporting advanced research, they might want an EHR system that was both capable of all of the expected functions for routine clinic patient care activities, but also had unique features to support the needs for research reporting and clinical trials.

There are two types of mandatory inheritance in the EHR-S FM. All Functional Domain Profiles will inherit all functions in the Overarching section of the Function List Chapter and their related "SHALL" criteria. All criterion listed in a parent function will be applicable to all the children of that parent function.

A formal process exists for registering and balloting Functional Profiles. Functional Profiles that are submitted to the HL7 EHR WG with an attestation of conformance to Section 6: Conformance Clause of the HL7 EHR-S Standard and successfully complete review by the WG are designated as "*Registered Functional Profiles*". Registered Functional Profiles that undergo formal public scrutiny via the HL7 consensus process as an Informative EHR TC ballot at the committee level will be designated as *HL7 Informative functional domain or companion profiles*. HL7 Informative Functional Profiles are eligible to undergo full membership ballot via the HL7 consensus process. *For additional information on registering and/or balloting Functional Profiles, see the reference information in the How To Guide for Profiles (under development).*

6.3.2 Conformance Model

Conformance to the Functional Model is defined for Functional Profiles. A functional domain profile conforms either (1) directly to the Functional Model or (2) to another conforming functional domain profile. NOTE: All domain profiles must include all the functions and "SHALL" criteria of the Overarching Chapter. An EHR system does not conform directly to the Functional Model; rather, it conforms to a functional domain profile, or to a domain profile in combination with a selected companion profile. Thus, Functional Profiles claim conformance to the Functional Model and EHR systems claim conformance to one or more conforming domain Functional Profiles. An EHR system can also claim conformance to a domain Functional Profile, in combination with one of more companion profiles. An EHR system cannot claim conformance to only a companion profile. Figure 1 illustrates this relationship.

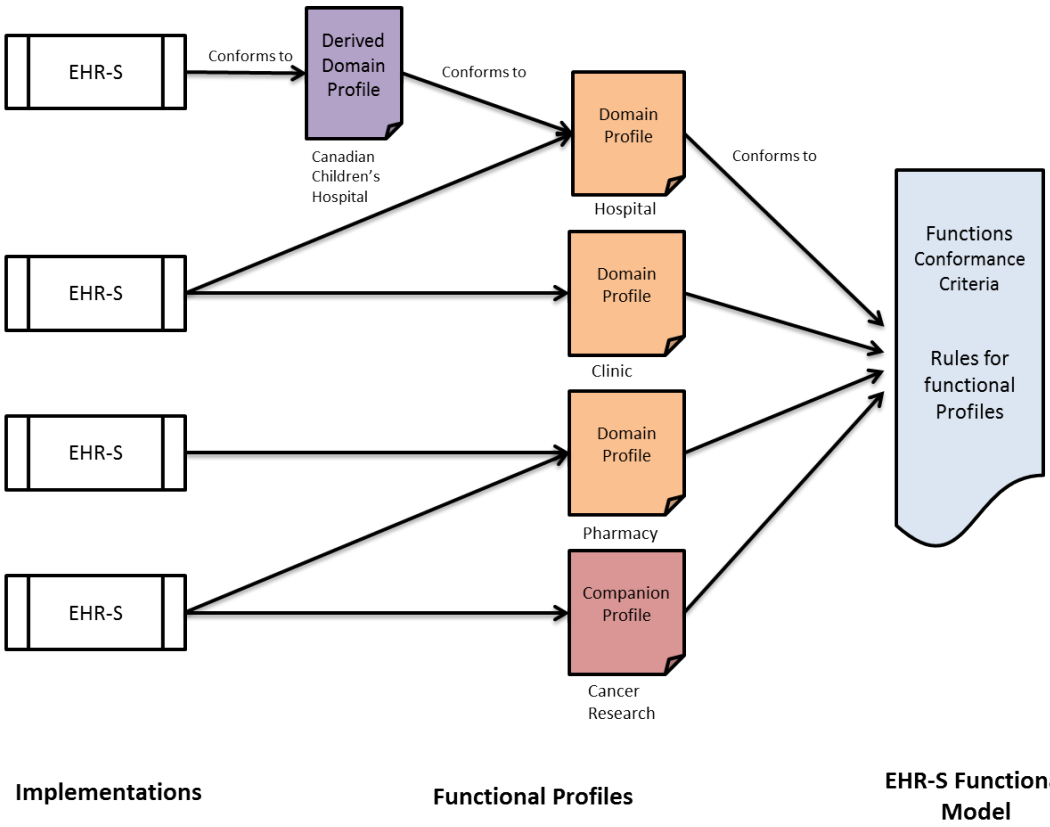

Figure 3 Conformance Relationships

6.3.3 Profile Traceability

Functional Profiles allow for added specificity and extensibility to the Functional Model with changes allowed to the base FM functions and criteria. However, section six of this chapter defines rules for these changes. It is also required that any changes and additions be tracked. Two added columns in profiles accomplish this. One column will document the unique source FM row number for each item in the new profile (or source profile for a derived profile). The second column will provide codes for the type of changes from the source FM (or source

profile). Together, these two traceability columns will keep track of the origins of the functions or criteria – and whether it is modified or unchanged from that within the FM or the source profile. This may be important when questions arise as to where did it come from, why did you choose or modify it, etc. It can also be helpful to have traceability back to the FM functions and criteria if and when revisions to a profile or for derived profile are needed to reflect care setting, regulatory, technology changes – or a future new release of the FM.

6.4 Normative Language (Normative)

The following keywords (i.e., normative verbs) **SHALL** be used to convey conformance requirements.

- SHALL – to indicate a mandatory requirement to be followed (implemented) in order to conform. Synonymous with 'is required to'.
- SHALL NOT – to indicate a prohibited action. Synonymous with 'prohibited'.
- SHOULD - to indicate an optional recommended action, one that is particularly suitable, without mentioning or excluding others. Synonymous with 'is permitted and recommended'.
- MAY - to indicate an optional, permissible action. Synonymous with 'is permitted'.

The EHR-S Functional Model (i.e., all chapters) contains normative, informative, and reference sections. In this Conformance Clause chapter, the normative content defines how a Functional Profile achieves conformance to the Functional Model.

6.5 Conformance Criteria (Normative)

Every function in the Functional Model is associated with a set of conformance criteria. These *conformance criteria* form the basis for determining whether the function has been implemented.

6.5.1 Criteria in the Functional Profile

Functional Profiles also have conformance criteria associated with functions in the Functional Profile. The Functional Profile's criteria are either (1) adapted from the Functional Model criteria with care-setting and application specific information or (2) if no care-setting or application specific criteria are present, inherited directly from Functional Model. Functional domain and companion profiles **MAY** change Functional Model criteria to match the needs and priorities of the Functional Profile's constituency, e.g., by making it more specific, or changing it from 'may' or 'should' to 'shall'. Functional Profiles **MAY** change the criteria of a function to allow for alignment to realm specific nomenclature, including language distinctions and implication of non-english translations. In these cases, the International Organization for Standardization (ISO) country code (ISO 3166 Country Codes) **SHALL** be appended to the function ID in the Functional Profile.

The functional domain profile **SHALL NOT** be made less restrictive than the Functional Model by changing 'shall' criteria to 'may' or 'should' criteria (The functional companion profile MAY be less restrictive that the FM by ignoring 'shall' criterion). Functional domain and companion profiles **MAY** also add additional criteria.

6.5.2 'Dependent SHALL' Criteria

Conformance criteria that contain the keyword 'shall' **and** a dependency on situational conditions are called 'dependent shall' criteria. The 'dependent shall' **SHALL** contain the phrase "in accordance with scope of practice, organizational policy, or jurisdictional law" or other appropriate grammatical tie-in words (e.g., 'based on' rather than 'in accordance'). A 'dependent shall' criteria is used to highlight only these (i.e., scope of practice, organizational policy or jurisdictional law) conditions. A 'dependent shall' criterion is a mandatory criterion for Functional Profiles and situational for EHR systems. Specifically,

- All functional domain profiles SHALL inherit the criterion if the function appears in the Functional Profile.
- An EHR system is required to implement the Dependent SHALL criterion only if the criterion is applicable per the stated dependency in the Functional Model. (If the Dependent SHALL criterion is not applicable to the profile, the developer of the profile may still use the criterion if desired.)

6.5.3 Referencing Other Criteria or Functions

There is often a link between functions and their criteria with other functions and criteria. For example, a given function may depend on another function or on a specific criterion associated with another function.

A criterion in the Functional Profile that references another function in the Functional Profile **SHALL** reference that function by indicating its name and ID, as "X.n.n (Name)". If the referenced function is required to be implemented, then all the 'shall' criteria of this referenced function apply. If the referenced function is a parent with children, the reference must be explicit on whether the children are included in the reference, all or selected ones. See the examples below:

- The system SHALL/SHOULD/MAY conform to TI.1.1 (Entity Authorization).
- The system SHALL/SHOULD/MAY conform to TI.2 (Audit) and all child functions.
- The system SHALL conform to CPS.4 Support Orders, and separate function(s) The systems SHALL conform to CPS.4.3 Non-medication Orders. The systems SHALL conform to CPS.4.6 Support for Referrals and all children functions.

A criterion in the Functional Profile that references a specific criterion in another function **SHALL** reference that function by rewriting the referenced criterion as one of its own and indicating the function and criterion number from where it came (e.g. F#, CC3).

6.6 Functional Model Structure and Extensibility (Normative)

6.6.1 Hierarchical Structure

Functions **MAY** be contained (i.e., nested) within other functions. A nested function is a 'child' to its 'parent' (i.e., the function that contains it). A child **SHALL** always have a parent. A function that is not a parent to another function is considered a 'leaf'. Figure 2 illustrates this hierarchical structure.

The Functional Model is represented as a hierarchical list of functions, consisting of functional header parents, functional header children and functional leaf functions. Headers include an ID, Name and "H" in the column labeled "Type". Parent and Child Headers **MAY** contain conformance criteria only if the criteria apply to all its descendent functions (i.e., children, grandchildren, and leafs). Parent, Child and Leaf functions contain at a minimum the following: ID, Name, Statement, Description, and Conformance Criteria and have a "F" in the "Type" column. Conformance criteria listed in a parent function **SHALL** be inherited by all its children functions. Conformance Criteria have a "C" in the "Type" column.

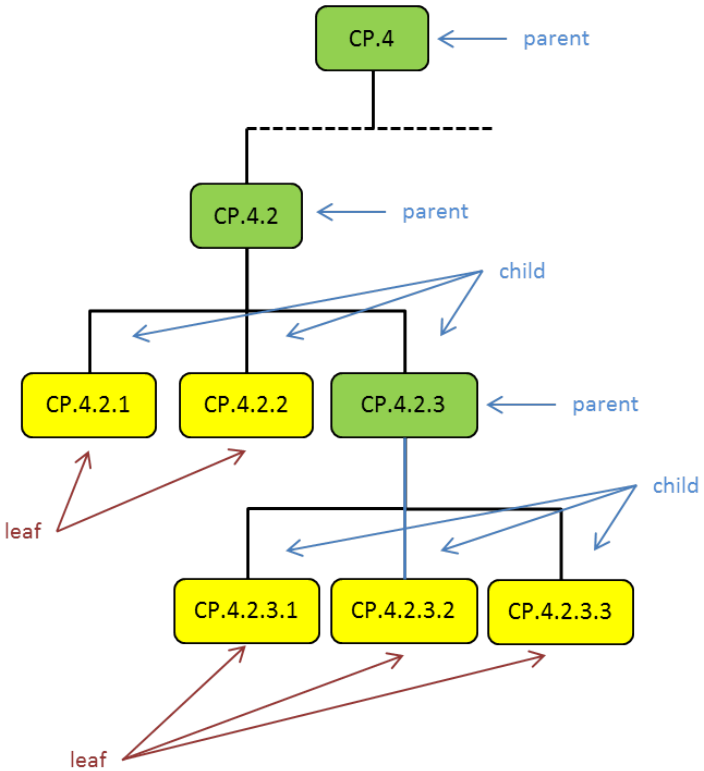

Figure 4 Portion of the Functional Model hierarchical structure

(Note: The numbering schema above reflects functions in the Care Provision chapter. For instance, CP.4.2 is the function 'Manage Medication Orders.)

Functional Profiles either:

- Select functions from the Functional Model for inclusion in the Functional Profile,
- Deem a function in the Functional Model as not applicable, thus do not select it for inclusion in the Functional Profile, or,

- Add a new child function when it has been determined that there is no applicable function in the Functional Model to represent a functional need in the Functional Profile.

6.6.2 Naming Convention

Functional Profiles **SHALL NOT** change the name or statement of a function except to allow for alignment to realm specific nomenclature, including language distinctions and implication of non-english translations. In these cases, the International Organization for Standardization (ISO) country code (ISO 3166 Country Codes) **SHALL** be appended to the function ID in the Functional Profile. It is recommended that the HL7 Affiliate for the respective realm coordinate with the profile development process to maintain a mapping of the Functional Model function name and/or statement and the realm-adjusted name and/or statement.

6.6.3 Priorities

Functional Profiles indicate the importance and/or immediacy of a Functional Profile by associating a priority with a function. Three priorities have been defined, Essential Now, Essential Future, and Optional.

- Essential Now indicates that the implementation of the function is mandatory, as of the profile issuance date.
- Essential Future indicates that the implementation of the function is currently optional but will be mandatory at some future time, which is specified by the Functional Profile
- Optional indicates that the implementation of the function is optional.

Any or all of these priorities **SHALL** be used in a Functional Profile. If the Essential Future priority is used, then Functional Profiles are required to define the timeframe associated with implementing functions. A timeframe **MAY** be a date, time allotment (e.g., year 2014 or 4 months after Functional Profile publication), or event (e.g., republication of this Functional Profile). A Functional Profile **MAY** define multiple timeframes for the Essential Future priority. If multiple timeframes are defined, then the timeframe **SHALL** be used to qualify each occurrence of the Essential Future priority (e.g., EF-2015, EF-2016).

6.6.4 Extensibility

To accommodate changes in technology as well as Functional Profiles' needs, the Functional Model is designed for extensibility, for functions and their related criteria. Incorporation of additional functions in the Functional Profile beyond what is defined in the Functional Model is accommodated through a set of rules for adding new functions as defined in Section 6.7.2.

Incorporation of additional criterion, changing the sequence of criterion and providing greater profile-specific detail, beyond what is defined in the Functional Model, is accommodated through a set of rules for adding new criterion or changing existing criterion as defined in Section 6.7.2.

6.7 Functional Profile Conformance (Normative)

A Functional Profile claiming conformance to the Functional Model **SHALL** meet all requirements specified in the 6.7.1 Rules for Functional Domain Profiles or in the 6.7.5 Rules for Functional Companion Profiles.

6.7.1 Rules for Functional Domain Profiles

Functional domain profiles that adhere to the Rules for Functional Profiles **SHALL** claim conformance to the version of the EHR-S Functional Model from which it was derived.

6.7.1.1 Functional Profiles claiming Functional Model conformance SHALL:

1. Identify the Functional Model with version/date, from which the Functional Profile is derived,
2. Include a description, version and issuance date of the Functional Profile,
3. Contain a Conformance Clause which
   a) Defines the requirements that EHR systems must satisfy in order to claim conformance to the Functional Profile,
   b) Defines the requirements that Functional Profiles derived from the Functional Profile (i.e., derived Functional Profiles) must satisfy in order to claim conformance to the Functional Profile.
   c) Specifies that functions designated with the priority 'Essential Now' SHALL be implemented by conformant EHR systems.
   d) Specifies that functions designated with the priority 'Essential Now' SHALL be included in any derived Functional Profiles.

e) If Essential Future is used, defines the meaning of 'Essential Future', including specifying the timeframe for when these functions are required to be implemented.
f) Requires that at least one function, regardless of its priority, be implemented in order for an EHR system to claim conformance to the profile.

4. Include all functions in the Overarching section of Function List as Essential Now and identify functions from other sections of Function List of the Functional Model that are applicable to the functional domain profile. For each identified function, indicate its priority (i.e., Essential Now, Essential Future or Optional).
5. For each function, derive conformance criteria based on the Functional Model's conformance criteria.
   a) In the Functional Profile, there SHALL be at least one criterion for each function that is mandatory (a 'shall' criterion).
   b) If there are 'shall' criteria (for the function in the Functional Model), then those criteria SHALL also exist for the function (in the Functional Profile). Additionally, if the function is split (in the Functional Profile), then the parent's 'shall' criteria SHALL appear in at least one child of that function.
   c) If, as yet there is no 'shall' criterion (for the function in the Functional Model), then at least one of the 'should' or 'may' criterion SHALL be made mandatory, i.e., a 'shall' criterion.
   d) Adhere to the rules for referencing functions or criteria in Section 6.5.3.
6. For any function in the Functional Model where one or more criteria are 'dependent shall' criteria, the Functional Profile for that function SHALL
   a) Replicate verbatim each 'dependent shall' in the Functional Profile, regardless of whether the dependent situation applies or not.
   b) When the dependent situation applies, create 'shall' criteria that apply the dependency to the 'dependent shall' criterion, resulting in one or more new, constrained versions of the 'dependent shall' criterion.
   c) State the specific scope of practice, organizational policy, and/or jurisdictional law which applies or state why these dependencies do not apply.
7. Adhere to the rules for creating new functions in Functional Profiles in Section 6.7.2.
8. Adhere to the rules for creating and changing conformance criteria in Section 6.5.
9. Complete the two traceability columns, see Section 6.3.3, for any changes to functions or criteria, and include the following codes for type of change: (N/C for no change; A for added; M for modified.).
10. Be structured in accordance with the structural requirements defined for the Functional Model in Section 6.6.1.
11. Use the Glossary Action verbs for modifying or creating new conformance criterion.

6.7.1.2 Functional domain profiles claiming conformance to the Functional Model MAY:

1. Create additional functions according to the rules specified in Section 6.7.2.
2. Contain conformance criteria more specific and limited in scope than those of the Functional Model.
3. Replace the text 'standard(s)-based' found in some criteria with specific standards and/or specifications named at the most discrete level of designation.
4. Change a 'should' criterion to a 'shall' or a 'may' criterion.
5. Change a 'may' criterion to a 'shall' or a 'should' criterion.
6. Ignore a 'should' or 'may' criterion in the Functional Model (i.e., not include it in the Functional Profile).
7. Add additional conformance criteria beyond those in the Functional Model.
8. Make the order of the conformance criteria significant (e.g., put all 'shall' criteria first).
9. Enforce common resolution of ambiguous semantics of the Functional Model.
10. Make the Functional Profile public (e.g., published on a web site) so interested parties can see/use it.
11. Submit the Functional Profile for registration review by the HL7 EHR Work Group.

6.7.1.3 Functional domain profiles claiming conformance to the Functional Model SHALL NOT:

1. Specify any requirements that would contradict or cause non-conformance to the Functional Model.
2. Modify the name or statement of any function in the Functional Model, except to allow for alignment with realm specific nomenclature as specified in Section 6.6.2.
3. Change a mandatory conformance criteria to an optional criteria (i.e., replace the 'shall' within the criteria to 'should' or 'may') of any function in the Functional Model.
4. Modify any requirements of a function not selected for the Functional Profile (i.e., all unselected functions default to the Functional Model's criteria. If a profiling group wants to change something, they SHALL promote it into their Functional Profile).

6.7.2 Rules for Creating New Functions in Functional Profiles

If a function is not adequately specified for a Functional Profile or does not exist, the Functional Profile **SHALL** only create new children, the new children can be parents or leafs . Figure 5 illustrates the addition of a new child function.

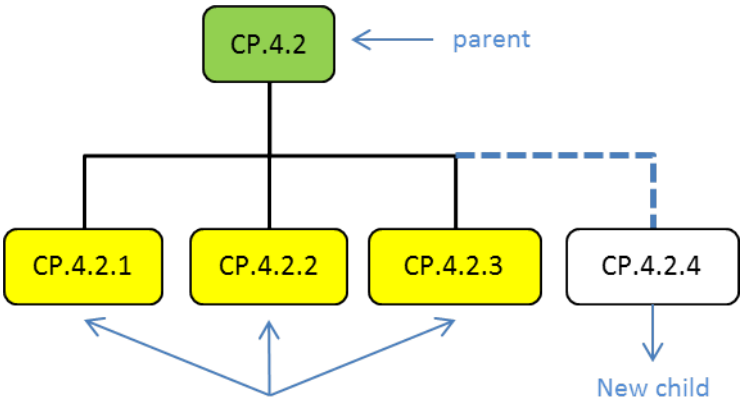

Figure 5 Creating a new function

The following rules specify the method for creating new functions.

1. Whenever possible, conformance criteria SHOULD be used to avoid creating a new function. This may be done, for example, in cases where the original function's conformance criteria are too broad: divide the Functional Model's or base Functional Profile's inherited conformance criteria into two criteria in the Functional Profile, one being mandatory and the other optional. If this is not possible, the creation of a new child function and associated criteria is allowed if necessary to clearly define the profile requirements.
2. When a 'leaf' function exists (a child that is not a parent) but is too broadly specified in the Functional Model or base Functional Profile for conformance criteria to adequately constrain it, then the function MAY be split as follows:
   a) The original 'leaf' function is retained as the parent of its newly created children functions, or
   b) The original 'leaf' function's conformance criteria SHALL be distributed among its children functions.
3. When no candidate function exists to express the requirements of a Functional Profile, a new child function MAY be created (e.g., adding a new kind of summary list under the summary list's parent).
4. 'Parent functions SHALL NOT be split. This preserves the structure of the underlying Functional Model in the Functional Profiles.

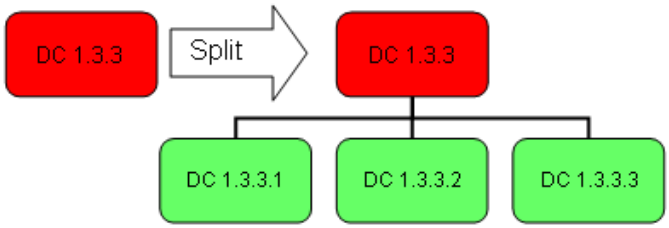

Figure 6 Splitting a function

If new children functions are created by a Functional Profile that is balloted or registered, these new functions will be captured by the HL7 EHR WG and tracked for review. The EHR TC WILL use these new functions and related criterion as input and candidates for changes to the Functional Model (e.g., inclusion, relaxation of conformance criteria). The EHR WG MAY maintain a file of functions and criterion reviewed and rejected for inclusion in a future version of the FM.

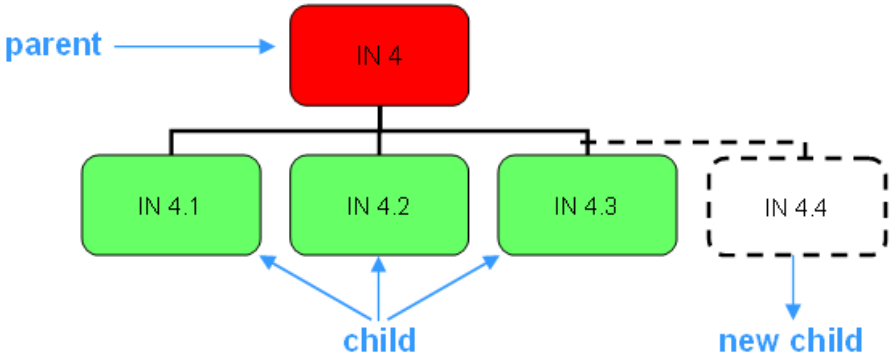

Figure 7 Adding a new child function

Function IN 4.4 is added as a new child which is a sibling to IN 4.1, IN 4.2, and IN 4.3..

6.7.3 Rules for Derived Functional Profiles

6.7.3.1 Derived functional domain profiles claiming conformance to one or more base functional domain profiles SHALL:

1. Adhere to all the rules for Functional Domain Profiles as specified in Section 6.7.1.
2. Adhere to the rules for creating new functions as specified in Section 6.7.2, if not prohibited by the base Functional Profile.
3. Identify the base Functional Profiles from which it is derived.
4. For each function inherited from a base Functional Profile, retain and not change mandatory conformance criteria to optional conformance criteria.

6.7.4 Conformance Statement

Functional Profiles **MAY** want to require that a conformance statement be produced for systems claiming conformance to the profile. A *Conformance Statement* provides information about an EHR system, by presenting in a uniform manner the functions that have been implemented by the EHR system. A blank (i.e., yet to be completed) Conformance Statement typically takes the form of a questionnaire or checklist, to be completed for each EHR system.

A Conformance Statement provides a concise summary of a Functional Profile. It follows a standard layout, thus providing EHR system vendors and users a quick overview of the Functional Profile's functions. Moreover, it can also be used to highlight optional functions and capabilities supported by the EHR systems as well as document any extensions (i.e., additional functionality beyond what is in the Functional Profile) or specializations that have been made. An EHR system's Conformance Statement provides information that can be used in assessing the EHR system's conformance to a specific Functional Profile. Additionally, organizations wishing to acquire an EHR system **MAY** produce a Conformance Statement to indicate the functions that are required and/or desired in an EHR system

Functional Profiles **MAY** want to include a blank, to be completed, sample Conformance Statement in order to promote consistency among completed Conformance Statements. Conformance Statements can be useful in determining the chances of interoperability between two EHR systems, by comparing the functions supported by each EHR system. Additionally, for conformance testing purposes, it can be used to facilitate the selection of tests that would be applicable to a particular EHR system being tested. For example, if an EHR system did not implement functions designated as 'Essential Future', this would be evident in the Conformance Statement and the tests for these functions (which are unimplemented) would not be performed.

6.7.5 Rules for Functional Companion Profiles

Functional companion profiles that adhere to the Rules for Functional Profiles **SHALL** claim conformance to the version of the EHR-S Functional Model from which it was derived. Functional companion profiles will follow the section 6.7.1 Rules for Functional Domain Profiles and the section 6.7.3. Rules for Derived Functional Profiles, except for the exceptions and addition described below:

Functional companion profiles claiming Functional Model conformance SHALL:

1. Adhere to section 6.7.2 for adding new functions,
2. Contain a Conformance Clause which
   a) Defines at least one functional domain profiles for which the companion profile can be linked that EHR systems must satisfy in order to claim conformance, or state any specific domain profiles that can or cannot be link to the companion profile,

b) Defines the requirement(s) that companion profiles derived from the base functional companion profile (i.e., derived Functional Profiles) must satisfy in order to claim conformance to the functional companion profile.

3. Include only functions being modified from the Overarching section of Function List as Essential Now and identify functions from other section of Function List of the Functional Model that are applicable to the functional companion profile. For each identified function, indicate its priority (i.e., Essential Now, Essential Future or Optional).
4. For each function, derive conformance criteria based on the Functional Model's conformance criteria.
   a) In the Functional Profile, there SHALL be at least one criterion for each function that is mandatory (a 'shall' criterion).
   b) If there are 'shall' criteria (for the function in the Functional Model), then those criteria MAY also exist for the function (in the functional companion profile) if changes. Additionally, if the function is split (in the Functional Profile), then the parent's 'shall' criteria MAY appear in at least one child of that function.
5. For any function in the Functional Model where one or more criteria are 'dependent shall' criteria, the functional companion profile may elect to ignore the criterion, but if selected for that function SHALL follow the rules of section 6.7.1.

Functional companion profiles claiming conformance to the Functional Model MAY:

1. Ignore a 'shall', ''should' or 'may' criterion in the Functional Model (i.e., not include it in the Functional Profile).

There are no exceptions to section 6.7.5. for Derived Functional Companion Profiles

6.8 Use Cases and Samples (Reference)

6.8.1 Functional Profile Use Cases

6.8.1.1 Care setting

It is determined that a new care setting functional domain profile is needed to reflect the care setting specific requirements. To help ensure widespread use and uniformity, the Functional Profile authors elect to undergo the registration review followed by the HL7 consensus process (i.e., submitting the registered Functional Profile for an "Informative" committee level ballot). If successful, the result will be designated a HL7 Informative Functional Profile.

After looking at current list of HL7 informative Functional Profiles, the decision to create a new Functional Profile is made. Each function in the EHR System Functional Model is examined and those that are relevant to the care setting are chosen. From these functions, a small set of 'core' functions are selected as being essential and mandatory. For each function, conformance criteria is developed either adapting the Functional Model conformance criteria or in a few cases, using the Functional Model criteria as is. To complete the Functional Profile, a description of the Functional Profile, including its intended use and audience as well as a Conformance Clause is written. The Functional Profile is made public by publishing it on various web sites. Additionally, the Functional Profile is submitted to HL7's EHR technical committee for registration review, comment and ballot.

6.8.1.2 Community of interest derived functional domain and companion profiles

A community of interest (e.g., regional health information exchange network) wants a functional domain profile to reflect their specific needs, and the needs of one of their members to support clinic research.

The Community of Interest doesn't want to create a new Functional Profile from scratch. After looking at the list of Registered Functional Profiles, they find an existing Functional Profile that is very close to what they want. Using this Functional Profile as the base, they accept all the functions designated as 'Essential Now', reject functions designated as 'Future' and add several more functions. For each function, they review the conformance criteria and adapt the criteria to reflect their situational information.

For the one member of the community that needs to support research, a functional companion profile is created. The Functional Profile is only needed to address the narrow areas of operation that are specific to research. So, the group finds an existing companion profile for clinical research and modifies it to reflect the functions needed for the specific disease state implications for the research activities of their member. Now the Community of Reference can seek a vendor that can meet the needs of both the domain profile for the group and the companion profile for the unique member.

6.8.1.3 Vendor functional domain profile and overarching conformance

A vendor with an EHR system wants to claim conformance to the EHR System Functional Model.

The vendor identifies and lists all the functions that are in his product. The vendor adds a description and a Conformance Clause (see samples in section 7.2). This is the vendor's functional domain profile. If the vendor has actually implemented all the functions listed, then this is equivalent to 'Essential Now' and these functions are mandatory. If functions that are currently implemented and those that will be implemented in the future are listed, then the Functional Profile is comprised of 'Essential Now' and 'Essential Future' and/or optional functionality. Finally, the vendor adds conformance criteria for each function, inheriting some criteria directly (without change) from in the Functional Model. But can also add new criterion to reflect added system features. If all children of a function have the same new criterion, that criterion would be moved to the parent function as overarching, and applicable to all the children. This is appealing in that, the vendor has the opportunity to list all the current functionality and if desired, indicate future plans. In essence, this is similar to a vendor Conformance Statement (a concept most vendors are already familiar with). A vendor may create multiple Functional Profiles.

6.8.2 Sample Functional Domain Profile Conformance Clauses

To aid Functional Profile developers in developing a Conformance Clause for their Functional Profile, as required by Section 6.1 rule #3, the following examples are offered. Note: in these examples, the keywords 'shall', 'should', and 'may' are capitalized and bold. This is a convention to draw attention to the keywords.

6.8.2.1 Conformance Clause for a care-setting functional domain profile

This functional domain profile defines the conformance requirements for EHR systems and derived functional domain profiles. To conform to this Functional Profile, all 'Essential Now' functions **SHALL** be implemented. 'Essential Now' functions are considered mandatory functions. An EHR system is conforming if it implements all the functions designated as 'Essential Now' and the mandatory conformance criteria associated with that function. A derived functional domain profile is conforming if it follows the Rules for Functional Profiles.

Mandatory conformance criteria are indicated by the keyword 'shall**'**. Optional conformance criteria are indicated by the keywords 'should' or **'**may'.

EHR systems **SHALL** provide a Conformance Statement structured according to the rules and policies defined in this Functional Profile.

6.8.2.2 Conformance Clause for an application

E-Application is an application that if included in a care-setting specific system **SHALL** conform to this Functional Profile. E-Application is an application that has a defined set of attributes of which a minimum set of functions is required of any system claiming this e-Application functionality. Two levels of conformance are designated:

- Core Conformance is comprised of the functions in the minimal set of functions that are designated as 'Essential Now'.
- Advanced Conformance comprises the entire minimal set of functions (i.e., all 'Essential Now' as well as those designated 'Essential Future' functions).

A system **MAY** claim conformance to either the Core or Advanced Conformance levels, if it implements all the mandatory criteria for the functions at the conformance level for which the claim is being made.

Functions designated with the priority 'Essential Now' indicate core functionality. These functions are required to be implemented in order to claim conformance to E-Application, regardless of the level of conformance (i.e., core or advanced) to which the claim is made.

Functions designated with the priority 'Essential Future' indicate advanced functionality. These functions are required to be implemented in order to claim advanced level conformance. 'Essential Future' functions become mandatory 18 months after publication of this Functional Profile and thus, required for immediate implementation in order to claim conformance at either the core or advanced levels.

6.8.2.3 Conformance Clause for a vendor system functional domain profile

Conformance is defined for My-EHRsystem. All functions in this Functional Profile are mandatory, are deemed as 'essential now', and **SHALL** be implemented in order to conform to this Functional Profile.

6.8.2.4 Conformance Clause for a community of interest functional companion profile

Conformance is defined for BuyMyDiabetesEHR. To conform to this functional companion profile, all functions labeled as 'essential now' **SHALL** be available and have been implemented, , and all functions labeled 'essential now' in the Long Term Care or Ambulatory domain profile must also be available and implemented. Functions labeled 'essential future' are optional, in that they are present for informational purposes only and **MAY** be implemented in future functional companion profiles.

6.9 Interpreting and Applying a Conditional 'SHALL' (Reference)

Conformance criteria in the FM and those created can be structured in the simple format an Actor followed by normative verb followed by action or property. For example: The system **SHALL** capture demographic information as part of the patient record.

However, there are two conditional forms for which if the condition is true, then the following text must apply. One is If/Then. If condition, then Actor followed by normative verb followed by action. If the condition is not met (i.e., false) then ignore the rest of the sentence. For example, IF data is exchanged with internal or external systems, THEN the system **SHALL** conform to function IN 5.1 (Interchange Standards)

The other is a 'Dependent Shall' format. Actor followed by normative verb followed by action/interaction followed by 'according to scope of practice, organizational policy or jurisdictional law'. For example, "The system **SHALL** enable EHR-S security administrators to grant authorizations to principals according to scope of practice, organizational policy, or jurisdictional law."

The following example of a Functional Model 'dependent shall' criterion will be used to illustrate conditional concepts throughout this section.

> *Functional Model criterion: The system SHALL enable EHR-S security administrators to grant authorizations to principals according to scope of practice, organizational policy, or jurisdictional laws.*

6.9.1 General Concepts

The purpose of the 'dependent shall' is to allow Functional Profiles to constrain a Functional Model 'shall' criteria based on situational conditions such as policy and legal implications. Specifically, the 'dependent shall' criteria in the Functional Model are 'shall' criteria + a dependency, where the dependency is defined by:

- Scope of practice which applies to the EHRs user's scope of practice and refers to best practices within the user's discipline – which may be care setting specific or not.
- Organizational policy which refers to a plan or course of action intended to influence and determine decisions, actions, and other matters of a group of persons organized for a particular purpose within an association and structure through which individuals cooperate systematically to conduct business.
- Jurisdictional law which refers to the territorial range of authority or control with the power, right, or authority to interpret, apply, and declare the body of rules and principles governing the affairs of a community and enforced by a political authority; a legal system.

The structure of the 'dependent shall' criteria in the Functional Model is the same as the 'shall' criteria except with the addition of the phrase "in accordance with scope of practice, organizational policy or jurisdictional law" or other appropriate grammatical tie-in words (e.g., based on rather than in accordance). Note that all three dependencies are present in the Functional Model 'dependent shall' criteria. It is the Functional Profile that narrows it to any one dependency or any combination of the three. Moreover, in the Functional Profile, the specific scope of practice, organizational policy, and/or jurisdictional law which necessitates evoking the 'dependent shall' is explicitly identified.
For example: (derived from the Functional Model criterion above)

> *Functional Model criterion: The system SHALL enable EHR-S security administrators to grant authorizations in accordance with HIPAA.*

The difference between a 'shall' criterion and a 'dependent shall' criterion is shown in Table 3 below.

	'SHALL' Criterion	**'Dependent SHALL' Criterion**
Be present in the Functional Profile	Yes, either verbatim or modified (e.g., constrained or refined)	Yes, verbatim. If dependency exists, add additional criteria reflecting the dependency.
Implemented by EHR	Yes.	Situational - only implement if the dependency

systems		exists. Specifically, EHR system does not implement the 'dependent shall' criterion (as copied from the FM), but does implement additional 'shall' criteria created to reflect the dependency.

Table 3 Differences between 'shall' and 'dependent shall'

6.9.2 Rationale for 'Dependent SHALL'

The reason for using a 'dependent shall' in the Functional Model is to highlight these criteria and bring them to the attention of the reader – both developers of Functional Profiles as well as other users. These criteria are considered to be special cases, where there are one or more dependencies that affect these criteria, across multiple care settings. Using the 'dependent shall' ensures that developers of all Functional Profiles address the criterion and consciously decide whether the criterion in question is applicable, based on the stated dependency.

Regardless of whether a dependency exists or not, the 'dependent shall' is copied verbatim into the Functional Profile. The reasons for this are:

- Adherence to the rule that a 'shall' criterion is always inherited by the Functional Profile.
- Consistency with handling the 'dependent shall' under all conditions (i.e., when there are dependencies and when there are not.
- Retention of the 'dependent shall' so that it is present for derived profiles.
- Retention of the 'dependent shall' so that it remains effective for this profile if future requirements change (i.e., the dependency may not be applicable at this present time, but may be applicable in the future due to changes in scope of practice, organizational policy or jurisdictional law.

6.9.3 How to Apply the 'Dependent SHALL'

The way to interpret and apply a 'dependent shall' criterion in a functional domain profile is as follows:

- Copy the criterion into the Functional Profile.
- Review the criterion and determine if any of the dependencies are applicable to the Functional Profile.
- Dependency exists

  If one or more dependencies are applicable to the Functional Profile (e.g., there are jurisdictional legal requirements), add one or more 'shall' criteria that refine and further constrain the 'dependent shall' with respect to the dependencies.

For the new criteria, add an explanation and/or citing for the dependency. For example, jurisdictional legal requirements for this Functional Profile are defined by Federal Regulations (see 45 CFR Parts 160, 162 and 164 – The HIPAA Security Rule. The explanation or citing may be in an appendix. It is likely that multiple criteria will reference the same explanation or citing.

6.9.3.1 Examples:

Functional Profile criteria

> *1. The system SHALL enable EHR-S security administrators to grant authorizations to principles in accordance with HIPAA*.*
>
> *2. The system SHALL enable EHR-S security administrators to grant authorizations for roles in accordance with 42 CFR Part 2*.*

Dependency Explanation

**For a U.S. realm Functional Profile, the Health Insurance Portability and Accountability Act of 1996 (HIPAA) as well as other jurisdictional legal requirements or other more stringent requirements would be applied to 'dependent shall' criteria in the Functional Profile.*

FM	Dependency Applicable?	Applicability	Functional Profile
Dependent SHALL	Yes	Mandatory	Copy SHALL from FM
		Mandatory	Add additional criteria to reflect the dependencies. Use 'shall'.
		Mandatory	Add explanation or citing
		Optional	Add additional criteria derived from 'dependent shall'. Use 'shall', 'should' or 'may'.

Table 4 Summary of actions when dependency exists

- No Dependency exists

  If no dependency is applicable to the functional domain profile (i.e., there are no scope of practice, organizational policies or jurisdictional legal requirements that apply), then document the rationale for deciding that no dependencies apply. This explanation may be in an appendix. It is likely that this explanation will apply to multiple 'dependent shall' criteria.

FM	Dependency Applicable?	Applicability	Functional Profile
Dependent SHALL	No	Mandatory	Copy SHALL from FM
		Mandatory	Add explanation
		Optional	Add additional criteria derived from 'dependent shall'. Use 'shall', 'should' or 'may'.

Table 5 Summary of actions for when no dependencies

- Add additional criteria – regardless of whether a dependency exists or not.

  It is always permissible for a Functional Profile to add new criteria. Add new criteria that are derived from the 'dependent shall'. Use any keyword: 'shall', 'should' or 'may' (see Section 3) in these new criteria.

  Examples:

  *1. The system **SHOULD** enable EHR-S security administrators to grant authorizations to principals.*

  *2. The system **MAY** enable EHR-S security administrators to grant authorizations for roles.*

  *3. The system **SHOULD** enable EHR-S security administrators to grant authorizations within contexts.*

  *4. The system **SHALL** enable EHR-S security administrators to grant authorizations for roles for organizations with 10 employees or more.*

7 Glossary

7.1 Preface (Reference)

The majority of this glossary is classified as REFERENCE. The Action-Verb Structure section is NORMATIVE. This glossary is provided as guidance for preparing and interpreting HL7 Electronic Health Record System functional profile specifications and conformance statements. The goal is to promote clarity and consistency when interpreting and applying the text of the HL7 Electronic Health Record System Functional Model (EHR-S FM).

This Glossary is intended to be international in application. However, each realm may want to adjust terms to their own language.

7.2 Introduction (Normative)

The Health Level Seven International (HL7) Electronic Health Record System Functional Model (EHR-S FM) Glossary is an HL7 reference document that provides a set of definitions and guidelines in order to ensure clarity and consistency in the terms used throughout the functional model. The Glossary includes the definition of important terms used in the expression of EHR systems' functionalities, and comprises a consensus-based list of Action-Verbs and specific guidelines for constructing conformance criteria (CC).

Action-Verbs play a critical role in phrasing conformance criteria (CC). Extensive efforts were made to categorize and normalize Action-Verbs and to develop guidelines for creating clear and consistent CCs throughout the EHR-S FM. Continuity with previous EHR-S FM versions is provided by including Glossary terms that have been deprecated, accompanied by suggestions for preferred replacement terms. Vigorous efforts were deployed to reduce the ambiguities inherent in the use of human language; care was used to respect the fundamental meaning of words and to avoid domain specific usage of terms.

7.3 Overview (Reference)

HL7's EHR Work Group intends to continually unify the glossaries that support both the EHR and Personal Health Records (PHR) System Functional Models, since both models overlap in health care information coverage and system functionalities, and since readers are often the same people. It is expected that Functional Profiles (FP) created within the context of the EHR-S FM will align with and respect this Glossary. However, this Glossary will not provide definitions for all the terms used in Functional Profiles. FPs will typically use context-specific, realm-specific, or specialized terms associated with their area of focus, and will need to incorporate a complementary glossary for these special terms.

In the case where FPs are merged, care should be exercised to ensure that the same Action-Verbs are used with the same meaning, and that identical meanings are conveyed with the same Action-Verb. It is recommended that existing FPs be re-examined and updated to better align with this Glossary.

Some common terms and Action-Verbs have not been included in this Glossary. For example, terms like 'computer', 'keyboard', 'archive' and 'compact' are considered general computer field terms that do not need to be defined here. Some other terms reflect functionalities inherent in any computer system and are not defined here, e.g. compute. Readers who desire definitions of terms not covered in the Glossary are invited to consult trusted dictionaries or encyclopedias. Where definitions of terms are taken from recognized sources, specific references are included.

For historical purpose, an Appendix is provided that describes the previous hierarchies of Action-Verbs used in the EHR-S FM and the PHR-S FM, and the overall logic that guided the Glossary team in arriving at the current model.

7.4 Known Issues (Reference)

The following are known issues with this version of the glossary:

- This Glossary has been revised for Action-Verbs only. The Glossary Team (GT) intends to re-examine the other glossary terms in the future.
- Care has been taken to align definitions with trusted dictionaries. The two (2) main dictionary sources have been:
  - http://dictionary.reference.com/index.html, and
  - The Canadian Oxford Dictionary.
- Where definitions have been obtained from other trusted sources, the source is noted in the Reference column of the table. Invitations are extended to interested parties to complete the Reference column where applicable.
- Definitions provided are not expected to align with the various definitions included in other standards, jurisdictional laws and regulations or in domain specific glossaries. This glossary aims at being health care domain independent and universal.

7.5 The Action-Verb Structure (Normative)

The Action-Verbs to be used for writing conformance criteria in the EHR-S FM and the PHR-S FM are organized in three (3) categories, each with its own set of Action-Verbs:

- A system access category;
- A data management category; and
- An auditing category.

Each category consists of Action-Verbs that collectively represent a logical set of actions distinct from the other two (2) categories. All Action-Verbs at all levels are defined in the glossary section of this document (Section Four: Glossary), and illustrative examples are provided.

7.5.1 Secure (System) Category

The Secure System category provides Action-Verbs for controlling access (authenticating and authorizing users), tracking activities (logging and auditing), and sustaining operations. This category has one parent, Secure (System), and three (3) intermediate children: Control Access, Track, and Sustain (Operations).

Secure (System)				
Control Access		Track		Sustain (Operations)
Authenticate	Authorize	Log	Audit	

Table 6. Action-Verbs represented in Secure System category

- Track (govern; control; administrate; oversee; inspect; examine; assess; observe; monitor; police; enforce; check)
- Sustain (Operations) Keep the system running correctly (e.g., sustain operations; quality; integrity; throughput; mirror; reliability; failover; failsafe; versioned; virus-free; leak-free; up-to-date; safeguard).

7.5.2 Data Management Category

The Data Management category provides Action-Verbs for the complete range of data handling actions by a system. The category has one parent, Manage (Data), and five (5) children with subsets: Capture, Maintain, Render, Determine, and Manage-Data-Visibility.

Manage (Data)										
Capture	**Maintain**			**Render**			**Exchange**	**Determine**		**Manage-Data-Visibility**
Auto-Populate Enter Import Receive	Store Archive Backup Decrypt Encrypt Recover Restore Save	Update Annotate Attest Edit Harmonize Integrate Link Tag Untag	Remove Delete Purge	Extract	Present	Transmit	Export Import Receive Transmit	Analyze	Decide	De-Identify Hide Mask Re-Identify Unhide Unmask

Table 7. Action Verbs representing the Data Management category

The first three subsets cover the capture, maintenance and rendering of data as follows:

- Capture: Auto populate fields of data based on partially filled information, Enter data manually, Import data from an external source (which may be a device), and Receive data from another system (which may be in a device).
- Maintain: Store, Update and Remove data:
- Store: Save data on local media, Backup data on backup storage media, and Encrypt data for security and privacy purposes;
- Update: Edit data by modifying it, Annotate data with notes, Tag data with labels, Harmonize data with other sources, Integrate data together, and Link data to other data;
- Remove: Delete data from the index or directory, and Purge data from the storage media.
- Render: Extract data based on certain criteria, Present data on an attached device, and Transmit data to external systems or devices.

The next subset provides verbs for the determination of actions in processing data:

- Determine: Analyze data using rules and analytical steps and then Decide appropriate actions as a result of that analysis.

The final subset allows the construct of statements restricting the visibility of data and reversing those actions:

- Manage-Data-Visibility: De-Identify data as to prevent associating the data to a specific person, Hide data so that only authorized users can see that the data exist, and Mask data so that users can see that the data exist but only authorized users can actually view the actual data.
- To reverse these actions: Re-Identify, Unhide, and Unmask.

7.5.3 How Action-Verbs are defined

In this Glossary section, Action-Verbs are defined in the following manner:

For an Action-Verb that has a parent, the Action-Verb's definition will start with the immediate parent verb and then a restatement of the meaning of the Action-Verb, followed by at least one (1) example labeled as such. Examples will use the Action-Verb being defined with explanatory descriptions where relevant. An illustrative example follows:

- PRESENT (Action-Verb): To RENDER (the parent Action-Verb) data by delivering the data to local users in a meaningful and appropriate way. For example, the system may PRESENT an alert automatically when a newly-arriving lab value is received that is out of normal range.

For a top level Action-Verb, the definition will include the next immediate level of children, followed by at least one (1) example labeled as such. Examples will use the Action-Verb being defined with explanatory descriptions were relevant. An illustrative example follows:

- MANAGE (DATA) (Action-Verb): To handle data by capturing, maintaining, and rendering data, determining actions about data, and managing data visibility. For example, the system shall provide the ability for a user to MANAGE patient and family preferences as they pertain to current treatment plans.

7.5.4 Deprecated Verbs

The Glossary includes deprecated Action-Verbs, with suggestions on how to phrase their meaning using the standardized list of Action-Verbs and qualifiers as explained in section 7.5.3 How Action-Verbs are defined.

In this Glossary, the term deprecated is used to qualify Action-Verbs that were previously used in conformance criteria and are not part of the updated hierarchy of Action-Verbs; therefore, deprecated Action-Verbs should not be used. These deprecated Action-Verbs have been labeled as such. Examples of deprecated Action-Verbs include ALERT, QUERY, and SEARCH.

In conformance, the use of verbs which are specific in definition and use allows for greater understanding and consistency of conformance criteria throughout the model.

7.6 Guidelines for Use (Reference)

Contributors to the contents of the EHR-S FM must be thoroughly familiar with this 'Guidelines For Use' section. It is critical to the integrity of the EHR-S FM that key terms have a consistent meaning throughout the EHR-S FM specification.

7.6.1 General Guidance

Throughout the EHR-S FM, terms used for stating Conformance Criteria (CC) must respect meanings as conveyed in the definitions provided in this Glossary. Using the Action-Verbs rigorously will result in clearly written Conformance Criteria (CC) and help ensure consistent communication of functional requirements. Furthermore, combining various functional models and functional profiles is facilitated when a controlled set of terms is used consistently. Therefore, use of synonyms or local jargon should be avoided.

In the EHR-S FM, Statements and Descriptions should be written in 'business-like language', defining in business and user terms system capabilities that support user needs. CC should be written from the system's perspective, with rigor and consistency across functional areas, using Action-Verbs and the guidelines; CC should not be duplicates of the Statements and Descriptions. However, scope wise, both Statement/Description and the corresponding CC must address the same functionalities.

CC represents a fundamental component of the EHR-S FM by defining its functionalities in precise terms. Significant efforts were invested in developing a set of Action-Verbs with precise definitions that must be used in the construction of CC. The next section provides specific guidance on how CC should be composed.

Since various realms may require the use of certain terms (for example, a term that is embedded in national law), this EHR-S FM Glossary maintains a realm-independent perspective. The long term intent is to construct

CC that are computable and easy to validate as to their grammar and contents when it is relevant (e.g., use of list of approved Action-Verbs).

7.6.2 Constructing Rigorous Conformance Criteria

Rigor, clarity and consistency in crafting CCs are of paramount importance. The following rules are to be followed whenever possible:

- It is generally preferable to use separate CCs instead of trying to include multiple actions in a single criteria, unless such a combination provides for an economy of statements and is unambiguous.
- Where an action can be performed both automatically by the system and manually upon initiation by the user, separate CCs must be composed.

Selected verbs in conformance criteria should be at the proper level of granularity. If a parent verb in a hierarchy is used, then it means that the actions of all the children verbs under it are pertinent and apply.

- For example, instead of saying MAINTAIN clinical data which would imply storage, update and deletion of data, one would say STORE and UPDATE data if deletion of data was not allowed.
- For example, if a given CC expects EDIT and TAG to be reasonable application of the function, but that ANNOTATE, HARMONIZE, INTEGRATE, LINK are unreasonable, then the word MAINTAIN should be avoided in lieu of the more precise "EDIT and TAG".
- An example of multiple Action-Verbs: The system SHALL provide the ability to CAPTURE, STORE, EDIT, and TAG-as-deprecated the entries in the registry or directory so that it is current.

The general grammar to use in developing rigorous CCs has the following structure:

The system [SHALL | SHOULD | MAY] [provide the ability to] [Action-Verb] [object(s)] [participant(s)] [qualifier(s)] ["according to scope of practice, organizational policy, and/or jurisdictional law"].

- The system is the subject of all the Conformance Criteria. Therefore [subject(s)] is not a parameter and has been replaced by 'the system'.
- [SHALL | SHOULD | MAY]: mandatory. One – and only one – of these three auxiliary verbs must be used. Meanings are defined in EHR-S FM Conformance Clause document and are repeated here for convenience:
  - SHALL – to indicate a mandatory requirement to be followed (implemented) in order to conform. Synonymous with 'is required to'.
  - SHOULD – to indicate an optional recommended action, one that is particularly suitable, without mentioning or excluding others. Synonymous with 'is permitted and recommended'.
  - MAY – to indicate an optional, permissible action. Synonymous with 'is permitted'.
- [provide the ability to]: this is optional and is used when the action will depend on a user intervention;
- [Action-Verb]: mandatory. The Action-Verb must come from the standardized list presented in this Glossary and respect the definitions provided. When another verb would appear preferable, it is suggested to look for that verb in the Glossary definition section where it may be listed with suggestions for a replacement verb and composition. This guide provides numerous examples.
- [object(s)]: mandatory. Identifies the object(s) of the action.
- [participant(s)]: optional. Covers users (or external systems) that participate or are affected by the specified action.
- [qualifier(s)]: optional. This might relate to time, interval, condition(s). Can include (for example): "automatically", "manually", "in real time", "according to the business rules"
- ["according to scope of practice, organizational policy, and/or jurisdictional law"]: optional, when the action could be governed by relevant practices, policies and/or laws.

Note that "…provide the ability to…" is a key phrase that means "manual intervention is expected". Note also that "The system SHALL…" means that the system is required to perform the relevant function when all factors and specified conditions are met.

Some examples of rigorous CCs follow:

- The system SHALL provide the ability to PRESENT the list of scheduled patients according to selected criteria such as provider name, dates, time of day, nature of visit, etc. using language of choice.
- IF a provider attempts to prescribe a drug using the system, THEN the system SHALL DETERMINE whether interactions exist between the newly prescribed drugs and the medications

on the patient's current medication list, and RENDER an appropriate response to the provider, according to scope of practice, organizational policy, and/or jurisdictional law.

The verb 'Conform' is used with a special meaning in the FM and is not part of the Action-Verb model. It is a special instruction for including the functional requirements of one function in another function.

- For example: The system SHALL conform to function IN.1.1 (Entity Authentication).

7.6.3 Examples of Rewording Conformance Criteria using the Proper Action-Verbs

Examples are taken from the EHR S FM R1.1 version. These examples are provided as illustrations of improving the composition of CC, and do not imply that the CC will remain the same in later releases of the EHR-S FM.

- The system SHOULD provide the ability to ~~access~~ PRESENT summarized information through customized views based on prioritization of chronology, problem, or other pertinent clinical parameters.
- The system SHALL provide the ability to ~~finalize~~ TAG a document or note as finalized.
- The system SHOULD provide the ability to ~~derive order sets from care plans~~ DETERMINE and PRESENT the appropriate order sets, based on an analysis of care plans.
- IF the system is used to ~~enter, modify or exchange~~ CAPTURE, UPDATE or RENDER data, THEN the system SHALL conform to function IN.1.5 (Non-Repudiation), to provide the traceability necessary so that the sources and receivers of data cannot deny that they entered/sent/received the data.
- The system SHOULD provide the ability to ~~communicate~~ TRANSMIT the order to the correct recipient(s) for order fulfillment.
- The system SHALL provide the ability to ~~deactivate~~ TAG a problem as deactivated.
- The system SHALL provide the ability to ~~group tests done on the same day~~ ANALYZE and PRESENT tests in such a manner that those done on the same day are grouped together.
- The system MAY provide the ability to ~~create~~ CAPTURE a terminology map.
- The system MAY ~~notify~~ RENDER a notification to the clinician when specific doses are due.

Other examples of older verbs or phrases that were reviewed in context, and then re-written using the newest Action-Verb set include:

Release 1.1	Release 2
Create	MAINTAIN and RENDER
Add, input	CAPTURE
Define, Tailor, Specify, Set	CAPTURE and MAINTAIN
Generate	RENDER
Cite, Include	CAPTURE and RENDER
Export	EXTRACT and TRANSMIT
Find, Identify	EXTRACT the information needed to…
Specify	TAG
Prompt	RENDER a notification

Table 8: Verb/Phrase Differences between Release 1.1 and Release 2

7.6.4 Clarification of Terms

"Distinctions"; "Important Distinctions"; "Nuanced Terms"; "Special Notes"; "Troublesome Terms"

7.6.4.1 "Medication Order" versus "Prescription Order"

7.6.4.1.1 Motivation:

The EHR_S FM contains functionality that supports the management of orders for medications, devices, therapies, etc. The Work Group discovered a need to clarify the distinction between "medication orders" and "prescription orders".

7.6.4.1.2 Details of differences:

A Prescription Medication is a licensed medicine that is regulated by legislation and requires an order from an authorized practitioner before the medication may be obtained. The term is used to distinguish it from over-the-counter drugs which can be obtained without a prescription. Different jurisdictions have different definitions of what constitutes a prescription drug. [Adapted from Wikipedia: "Prescription Medication"]

A “Medication Order” is an instruction from an authorized practitioner (or prescriber) (e.g., physician, physician’s assistant, dentist, or nurse practitioner) for the dispensing of prescription or non-prescription drugs. That act is documented in the EHR system. A “Prescription” is a document that is transmitted (for example to a pharmacy) in response to the creation of a Medication Order.

7.6.4.1.3 Guidance:

“Prescription” should be used when referring only to those instances that a law requires.

“Medication order” is the preferred term in the EHR-S Functional Model

Annex B
(normative)

Function List

Please refer to the included file EHRS_FM_R2_ANEX_20140311.pdf for the EHR-S FM function list.

ISO/HL7 10781 - Electronic Health Record System Functional Model, Release 2

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Function List Component Descriptions

The Function List includes the following components:

Function ID # (Normative)	This is the unique identifier of a function in the Function List (e.g. CP.1.1) and should be used to uniquely identify the function when referencing functions. The Function ID also serves to identify the section within which the function exists (CP = Care Provision Section) and the hierarchy or relationship between functions (CP.1.1 is a sibling to CP.1.2, parent of CP.1.1.1 and child of CP.1). In many cases the parent is fully expressed by the children.
Function Type (Reference)	Indication of the line item as being a header (H) or function (F) or conformance criteria.
Function Name (Normative)	This is the name of the Function and whilst expected to be unique within the Function List; it is not recommended to be used to identify the function without being accompanied by the Function ID. Example: Manage Medication List
Function Statement (Normative)	This is a brief statement of the purpose of this function. Whist not restricted to the use of structured language that is used in the Conformance Criteria (see below); the Statement should clearly identify the purpose and scope of the function. Example: Create and maintain patient-specific medication lists.
Description (Reference)	This is a more detailed description of the function, including examples if needed. Example: Medication lists are managed over time, whether over the course of a visit or stay, or the lifetime of a patient. All pertinent dates, including medication start, modification, and end dates are stored. The entire medication history for any medication, including alternative supplements and herbal medications, is viewable. Medication lists are not limited to medication orders recorded by providers, but may include, for example, pharmacy dispense/supply records, patient-reported medications and additional information such as age specific dosage.
Conformance Criteria (Normative)	Each function in the Function List includes one or more Conformance Criteria. A Conformance Criteria, which exists as normative language in this standard, defines the requirements for conforming to the function. The language used to express a conformance criterion is highly structured with standardized components with set meanings. The structured language used to define conformance clauses in the Function List are defined in the Glossary (Chapter 4).
Row #	A unique number for the row within the section.

1. Overarching Section

Section Overview

The Overarching Section contains Conformance Criteria that apply to all EHR Systems and consequently must be included in all EHR-S FM compliant profiles. These criteria are grouped under a single Function.All functions within the Overarching Section have an identifier starting with “OV”.

Section/Id#: Type: Name:	Conformance Criteria	Row#
OV.1 Function Overarching Criteria		1

Statement: Overarching criteria are those that apply to all EHR Systems.

Description: The Overarching Section contains Conformance Criteria that apply to all EHR Systems and consequently must be included in all EHR-S FM compliant profiles. These criteria are grouped under a single Function.

	1. The system SHALL conform to function CP.9.1 (Produce a Summary Record of Care).	2
	2. The system SHALL conform to function CPS.9.3 (Health Record Output).	3
	3. The system SHALL conform to function CPS.9.4 (Standard Report Generation).	4
	4. The system SHALL conform to function RI.1.1 (Record Lifecycle) and all child functions.	5
	5. The system SHALL conform to function RI.1.2 (Record Lifespan) and all child functions.	6
	6. The system SHALL conform to function RI.2 (Record Synchronization).	7
	7. The system SHALL conform to function RI.3 (Record Archive and Restore).	8
	8. The system SHALL conform to function TI.1.1 (Entity Authentication).	9
	9. The system SHALL conform to function TI.1.2 (Entity Authorization) .	10
	10. The system SHALL conform to function TI.1.3 (Entity Access Control).	11
	11. The system SHALL conform to function TI.1.4 (Patient Access Management).	12
	12. The system SHALL conform to function TI.1.5 (Non-Repudiation).	13
	13. IF the system transmits data to or receives data from a system outside of a secure network, THEN the system SHALL conform to function TI.1.6 (Secure Data Exchange), to ensure that the data are protected.	14
	14. IF the system transmits data to or receives data from a system outside of a secure network, THEN the system SHALL conform to function TI.1.7 (Secure Data Routing), to ensure that the exchange occurs only among authorized senders and receivers.	15
	15. The system SHALL conform to function TI.1.8 (Patient Privacy and Confidentiality).	16
	16. The system SHALL conform to function TI.2 (Audit) and all child functions.	17
	17. The system SHOULD conform to function TI.3 (Registry and Directory Services).	18
	18. The system SHALL conform to function TI.4 (Standard Terminology and Terminology Services).	19
	19. IF the system manages data for which standard terminologies have been established, THEN the system SHALL conform to function TI.4.1 (Standard Terminologies and Terminology Models) to support semantic interoperability.	20
	20. IF the system manages data for which standard terminologies have been established, THEN the system SHALL conform to function TI.4.2 (Maintenance and Versioning of Standard Terminologies) to preserve the semantics of coded data over time.	21
	21. IF terminology mapping is implemented within the system, THEN the system SHALL conform to function TI.4.3 (Terminology Mapping).	22
	22. IF the system receives or transmits data for which jurisdictionally established interchange standards exist, THEN the system SHALL conform to function TI.5.1 (Application and Structured-Document Interchange Standards) and all child functions to support interoperability.	23
	23. IF the system receives and transmits data for which generally accepted interchange standards have been established, THEN the system SHALL conform to function TI.5.2 (Interchange Standards Versioning and Maintenance), to accommodate the inevitable evolution of interchange standards.	24
	24. The system SHOULD conform to function TI.5.3 (Standards-based Application Integration).	25
	25. IF the system receives and transmits data with other systems outside itself, THEN the system SHALL conform to function TI.5.4 (Interchange Agreements), to define how the sender and receiver will exchange data.	26
	26. The system SHOULD conform to function TI.6 (Business Rules Management).	27
	27. The system SHOULD conform to function TI.7 (Workflow Management).	28
	28. The system SHALL conform to function TI.8 (Database Backup and Recovery).	29
	29. The system SHALL conform to function CPS.10 (Manage User Help).	31
	30. The system SHALL conform to function TI.9 (System Management Operations and Performance).	30

2. Care Provision Section

Section Overview

The Care Provision Section contains those functions and supporting Conformance Criteria that are required to provide direct care to a specific patient and enable hands-on delivery of healthcare. The functions are general and are not limited to a specific care setting and may be applied as part of an Electronic Health Record supporting healthcare offices, clinics, hospitals and specialty care centers. The functions in this section are organized in general flow of an encounter; however, it is recognized that encounter flow varies considerably in different care settings and scopes of practice. All functions within the Care Provision Section have an identifier starting with “CP”.

Section/Id#: Type: Name:	Conformance Criteria	Row#
CP.1 Header Manage Clinical History		32
Statement: Manage the patient's clinical history lists used to present summary or detailed information on patient health history. **Description:** Patient Clinical History lists are used to present succinct "snapshots" of critical health information including patient history; allergy, intolerance and adverse reactions; medications; problems; strengths; immunizations; medical equipment/devices; and patient and family preferences.		
CP.1.1 Function Manage Patient History		33
Statement: Manage medical, procedural/surgical, mental health, substance use, social and family history. This includes pertinent positive and negative histories, patient-reported or externally available patient clinical history. **Description:** The history of the current illness and patient historical data related to previous medical diagnoses, surgeries and other procedures performed on the patient, clinicians involved in procedures or in past consultations, and relevant health conditions of family members is captured through such methods as patient reporting (e.g., interview, medical alert band) or electronic or non-electronic historical data. This data may take the form of a pertinent positive such as "The patient/family member has had..." or a pertinent negative such as "The patient/family member has not had...". When first seen by a health care provider, patients typically bring with them clinical information from past encounters. This and similar information may supplement locally captured documentation and notes wherever appropriate. Information regarding the patient's living situations may be an important means for a provider to uniquely identify a patient or to identify illnesses that may occur within a given proximity. Information regarding past or present living situations or environmental factors related to the patient or the fetal death may include a description of the father's type of occupation and occupational demographic information (such as the name and location of the employment). For example, it may be important for the clinician to know that the patient works in an occupation where lead exposure is common. It may also be important for the clinician to know that the patient lives in a household where asbestos routinely appears on clothing.		
	1. The system SHALL provide the ability to manage current patient history including pertinent positive and negative elements (e.g., diagnosis or ruled out diagnosis), and information on clinicians involved.	34
	2. The system SHALL provide the ability to manage the identity of clinicians involved in patient history elements according to scope of practice, organizational policy, and/or jurisdictional law.	35
	3. The system SHOULD conform to function CPS.2.1 (Support externally-sourced Clinical Documents) to capture, store and render previous external patient histories.	36
	4. The system SHOULD conform to function CPS.2.2 (Support externally-sourced Clinical Data) to capture, store and render previous external patient histories.	37
	5. The system SHALL provide the ability to capture family history.	38
	6. The system SHALL provide the ability to capture social history.	39
	7. The system SHALL provide the ability to capture as part of the patient history the patient's relationships (e.g., genealogic, living situation, other).	40
	8. The system SHALL provide the ability to capture structured data in the patient history (e.g., administrative, social, mental health, geographic location, and/or financial statuses, poverty, orphan, disability, incarceration, incompetence, or remote geographic location).	41
	9. The system SHALL maintain and render documentation made in a non-linear as well as linear temporal and non-temporal sequence.	42
	10. The system SHOULD provide the ability to present multiple levels of data (log view versus readable view) versus not display at all.	43
	11. The system SHOULD provide the ability to capture patient history adhering to a standards-based form or template according to scope of practice, organizational policy, and/or jurisdictional law.	44
	12. The system SHOULD provide the ability to capture an indication of the patient's receipt of social subsidies.	45
	13. The system SHOULD provide the ability to capture Investigational Product (e.g., medication, device, immunization) exposure information including Start Date/time, End Date/Time, Dose Amount, Dose Unit, Study Treatment Name, Route, Formulation as discrete elements.	46
	14. The system SHOULD provide the ability to manage information regarding past or present living situations or environmental factors related to the patient (e.g., war, famine, poverty, political situation,	0

Section/Id#: Type: Name:	Conformance Criteria	Row#
	or proximity to dangerous chemicals) according to scope of practice, organizational policy, and/or jurisdictional law.	
CP.1.2 Function Manage Allergy, Intolerance and Adverse Reaction List		47

Statement: Manage patient-specific allergy, intolerance and adverse reaction lists.

Description: Allergens to substances, (including immunizations), are identified and the list of allergies is captured and maintained over time. Information regarding allergies may be coded or free text; coded information is preferred (where possible). In this function the term "allergy" is used to refer to allergies, intolerances, adverse reactions and sensitivities. All pertinent dates, including patient-reported events, are stored and the description of the patient allergy and adverse reaction is modifiable over time. The entire allergy history, including reaction, for any allergen is viewable. The list(s) includes all reactions including those that are classifiable as a true allergy, intolerance, side effect or other adverse reaction to drug, food or environmental triggers. Notations indicating whether item is patient reported, and/or provider verified are maintained. The term 'true allergy' is defined by the US National Library of Medicine as: an allergy that is caused by a series of chemical steps in the body that produce the allergic reaction. The allergy information that should be captured may vary according to scope of practice, organizational policy, and/or jurisdictional law. For example, the documentation requirements regarding an allergic reaction to a substance that is reportable may require a higher level of data capture.

	1. The system SHALL provide the ability to manage allergy, intolerance, and adverse reaction to drug, food, medical products (e.g., vaccines, biologics, devices, chemicals) or environmental triggers as unique, discrete entries.	48
	2. The system SHOULD provide the ability to manage the reason for the capture, update or removal of the allergy, no-longer-allergic, intolerance, sensitivity, and adverse reaction.	49
	3. The system SHALL provide the ability to manage the reaction type as discrete data.	50
	4. The system SHOULD provide the ability to manage the reaction type as coded data.	51
	5. The system SHALL provide the ability to manage the severity of an allergic or adverse reaction as discrete data.	52
	6. The system SHALL provide the ability to manage a report of No Known Allergies (NKA) for the patient.	53
	7. The system SHALL provide the ability to manage a report of No Known Food Allergies (NKFA) for the patient.	54
	8. The system SHOULD provide the ability to manage the source of allergy, intolerance, and adverse reaction information.	55
	9. The system SHALL provide the ability to tag as deactivated an allergy, intolerance or adverse reaction.	56
	10. The system SHALL provide the ability to capture as discrete data the reason for deactivation of an allergy, intolerance or adverse reaction.	57
	11. The system SHALL provide the ability to render an allergy, intolerance, and adverse reaction that has been deactivated.	58
	12. The system SHOULD provide the ability to render the list of allergies, intolerances and adverse reactions in a user-defined sort order.	59
	13. The system MAY restrict the ability to render the list of allergies, intolerances and adverse reactions in a user-defined sort order (e.g., to reduce the confusion when the same list is sorted by severity one day and then by date-of-onset the next day).	60
	14. The system SHALL provide the ability to tag that the list of allergies, intolerances and adverse reactions has been reviewed.	61
	15. They system SHALL provide the ability to capture and render the date on which allergy information was entered.	62
	16. The system SHOULD provide the ability to capture and render the approximate date of the allergy occurrence.	63
	17. The system SHOULD provide the ability to manage allergy-information as standards-based coded data.	64
	18. The system SHOULD provide the ability to capture and maintain allergy information prior to completion of the medication order.	65
	19. The system SHOULD provide the ability to capture and render that the allergies are "Unknown" or "Unable to Assess Allergies".	66
	20. The system SHOULD provide the ability to capture the reason for "Unknown" or "Unable to Assess Allergies" documentation.	67
	21. The system SHOULD provide the ability to tag records and render to providers that the allergies are "Unknown" or "Unable to Assess Allergies" and need to be updated.	68
	22. The system SHOULD provide the ability to capture free text allergies and render them in a manner that distinguishes them from coded allergy entries.	69
	23. The system SHOULD tag and render an indicator that interaction checking (e.g., drug-allergy checking) will not occur against free text allergies.	70
	24. The system SHOULD provide the ability to render historical allergy information.	71

Section/Id#: Type: Name:	Conformance Criteria	Row#
	25. The system MAY provide the ability to link an allergy, intolerance, or adverse reaction with diagnostic results (e.g., laboratory or allergy test result).	72
	26. The system SHOULD conform to function CPS.4.2.1 (Support for Medication Interaction and Allergy Checking) to render any potential interactions when capturing or maintaining allergies, intolerances or adverse reactions.	73
	27. The system SHOULD capture an indicator that a provider was presented with, and acknowledged, a drug interaction notification.	74
CP.1.3 Function Manage Medication List		75

Statement: Create and maintain patient-specific medication lists.

Description: Medication lists are managed over time, whether over the course of a visit or stay, or the lifetime of a patient. The entire medication history for any medication including, over-the-counter products, alternative supplements and herbal medications, is viewable. Medication lists are not limited to provider orders/prescriptions but may also include, for example, pharmacy dispensed medications without prescription, over the counter medications and patient-reported medications, etc. All pertinent dates, including medication start, modification, and end dates are stored. Medication Lists may also include additional information such as age-specific dosage.

	1. The system SHALL provide the ability to manage a patient-specific medication list based on current medication orders or prescriptions.	76
	2. The system SHALL provide the ability to manage as discrete data the details of the medication information including name of the medication ordered, medication identifier (e.g., RxNORM), prescriber, ordering date, SIG (e.g., dose amount and quantity, timing, duration and route, and/or site of administration), quantity, formulation and ancillary instructions according to scope of practice, organizational policy, and/or jurisdictional law.	77
	3. The system SHALL provide the ability to manage as discrete data the Study Treatment Name for any captured Investigational Product Exposures according to scope of practice, organizational policy, and/or jurisdictional law.	78
	4. The system SHOULD provide the ability to capture all dates associated with medications including start, end, and discontinuation dates according to scope of practice, organizational policy, and/or jurisdictional law.	79
	5. The system SHALL provide the ability to capture and maintain current and historical patient-specific medications in the Medication List.	80
	6. The system SHALL provide the ability to capture non-prescription medications including over the counter and complementary medications such as vitamins, herbs and supplements.	81
	7. The system SHALL provide the ability to render the medication history associated with a patient.	82
	8. The system SHALL provide the ability to tag a medication as "erroneously captured".	83
	9. The system SHALL provide the ability to render a Medication List excluding medications that have been tagged as "erroneously captured".	84
	10. The system SHALL render an indicator that a medication is tagged as "erroneously captured" when that medication is rendered in a Medication List.	85
	11. The system SHALL provide the ability to render a current medication list for patient use.	86
	12. The system SHOULD provide the ability to capture and render information regarding the filling of prescriptions - prior to the prescription being dispensed.	87
	13. The system SHOULD provide the ability to capture and render a notification that a prescription cannot be filled.	88
	14. The system SHOULD provide the ability to capture and render a notification that a prescription cannot be dispensed.	89
	15. The system SHOULD provide the ability to receive current medications and a medication history from an external source (e.g., a plan, payer or pharmacy).	90
	16. The system SHOULD provide the ability to tag that a medication history is unavailable or incomplete.	91
	17. The system SHALL provide the ability to capture a description of the medication and a reason for the medication when the medication name is unknown (e.g., if patient has received medication from external source and does not have the name, and/or the name is not in the system formulary).	92
	18. The system SHALL provide the ability to tag and render, on the active medication list, active medications that the patient brings from home to take while hospitalized, which the Pharmacy may not dispense, according to scope of practice, and/or organizational policy.	93
	19. The system SHOULD provide the ability to maintain the medication list with changes from pharmacist verification including pharmacist, date, and time.	94
	20. The system SHOULD provide the ability to manage the reason or indication for the medication when recording historical medications or medications from external sources (e.g., from home or other provider).	95
	21. The system SHOULD provide the ability to update a medication order directly from the medication list.	96
	22. The system SHALL conform to function CPS.4.2.1 (Support for Medication Interaction and Allergy Checking) to render any potential interactions when capturing or maintaining medications.	97

Section/Id#: Type: Name:	Conformance Criteria	Row#
	23. The system SHALL provide the ability to capture free text medications and render them in a manner that distinguishes them from coded medication entries.	98
	24. The system SHALL render an indicator that interaction checking will not occur against free text medications at the time of their capture.	99
	25. The system SHOULD provide the ability to render side effects of medications from the medication list that have been previously experienced by the patient.	100
	26. The system SHOULD provide the ability to render potential side effects of medications from the medication list.	101
	27. The system SHALL provide the ability to capture and render that the patient takes no medications.	102
	28. The system SHALL provide the ability to render active medications as defined by user requirements and according to scope of practice, organizational policy, and/or jurisdictional law (e.g., including medications that may still have a physiologic effect long after last administration).	103
	29. The system SHOULD provide the ability to render non-active medications or prescriptions for inclusion in current medication screening.	104
	30. The system MAY provide the ability to capture medication self-administration details including timestamps, observations, complications, and reason if medication dose was not taken.	105
	31. The system SHALL capture, maintain and present pre-admission medications according to scope of practice, and/or organizational policy.	106
	32. The system SHALL present pre-admission medications at the time of discharge according to scope of practice, and/or organizational policy.	107
CP.1.4 Function Manage Problem List		108

Statement: Create and maintain patient-specific problem lists.

Description: A problem list may include, but is not limited to chronic conditions, diagnoses, or symptoms, injury/poisoning (both intentional and unintentional), adverse effects of medical care (e.g., drugs, surgical), functional limitations, visit or stay-specific conditions, diagnoses, or symptoms. Problem lists are managed over time, whether over the course of a visit or stay or the life of a patient, allowing documentation of historical information and tracking the changing character of problem(s) and their priority. The source (e.g., the provider, the system id, or the patient) of the updates should be documented. All pertinent dates are stored, including date noted or diagnosed, dates of any changes in problem specification or prioritization, and date of resolution. This might include time stamps, where useful and appropriate. The entire problem history for any problem in the list is viewable.

	1. The system SHALL provide the ability to manage, as discrete data, all active problems associated with a patient.	109
	2. The system SHALL capture, maintain and render a history of all problems associated with a patient.	110
	3. The system SHALL provide the ability to manage the status of each problem (e.g., active, inactive, resolved).	111
	4. The system SHALL provide the ability to manage relevant dates including the onset date and date(s) of problem status change (e.g., inactivation or resolution date).	112
	5. The system SHALL provide the ability to manage information about the chronicity duration (e.g., chronic, acute/self-limiting) of a problem.	113
	6. The system SHOULD provide the ability to manage information regarding the information source (i.e. informant) of the problem.	114
	7. The system SHALL conform to function RI.1.1.17 (Deprecate/Retract Record Entries) to enable the inactivation or deprecation of a problem.	115
	8. The system MAY provide the ability to update an inactive problem in order to re-activate it.	116
	9. The system SHOULD provide the ability to render the list in a user-defined sort order.	0
	10. The system SHALL provide the ability to render only active problems.	117
	11. The system SHOULD provide the ability to link one or more problem(s) in the Problem list to encounters.	118
	12. The system MAY provide the ability to link one or more problem(s) in the Problem List to medications.	119
	13. The system MAY provide the ability to link one or more problem(s) in the Problem list to orders.	120
	14. The system MAY provide the ability to link one or more problem(s) in the Problem list to medical equipment.	121
	15. The system MAY provide the ability to link one or more problem(s) in the Problem list to prosthetic/ orthotic devices.	122
	16. The system MAY provide the ability to link one or more problem(s) in the Problem list to notes.	123
	17. The system SHALL provide the ability to link orders, medical equipment, prosthetic/orthotic devices, and medications to one or more codified problems.	124
	18. The system SHALL provide the ability to capture free text problems and render them in a manner that distinguishes them from coded problem entries.	125
	19. The system SHALL tag and render an indicator that interaction checking will not occur against free text problems.	126

Section/Id#: Type: Name:	Conformance Criteria	Row#
	20. The system SHALL provide the ability to capture a problem into the problem list using standardized coding schemas (e.g., ICD or SNOMED).	127
	21. The system SHALL provide the ability to manage free text comments associated with the problem.	128
	22. The system MAY provide the ability to manage the severity of a problem using a standards based classification scheme.	129
	23. The system SHOULD provide the ability to link actions taken and outcomes with a problem.	130
	24. The system MAY provide the ability to manage problems for known genetically based illnesses (e.g., single allele carrier status of a genetic trait or disease) according to scope of practice, organizational policy, and/or jurisdictional law.	131
	25. The system MAY provide the ability to manage a known single allele carrier status of a genetic trait or disease according to scope of practice, organizational policy, and/or jurisdictional law, and subject to patient's preferences and consent.	132
	26. The system SHOULD provide the ability to manage the linking of problems on the problem list, i.e., creating hierarchies or nestings within the problem list.	133
CP.1.5 Function Manage Health-Related Factors List		134

Statement: Manage patient-specific health-related factors.

Description: A patient's strengths (positive factors) or weaknesses (negative factors) may impact a patient's care or recovery and may be recorded as part of the EHR to support the development of care plans and treatment options. Examples of health factors include family support, financial support, health insurance levels, overall health, personal health behaviors (e.g., tobacco, physical activity, sleep), body mass index, employment status/type, access to care, or education level. Note that heath factors may be included in the Problem list (CP.1.4) which may include problems or strengths (e.g., ambulatory status or addictions). An example of an active patient-specific strength is an elderly parent receiving care from an adult child during the adult child's summer break from college. A patient's care may be affected by certain positive or negative factors. For example, coverage by insurance (a positive health factor) versus unemployment (a negative health factor).

	1. The system SHALL provide the ability to manage, as discrete data, patient-specific Health-Related Factors.	135
	2. The system SHALL provide the ability to manage the source of information regarding patient-specific Health-Related Factors.	136
	3. The system SHALL conform to function RI.1.1.17 (Deprecate/Retract Record Entries) to enable the inactivation or deprecation of a patient-specific Health-Related Factors.	137
	4. The system MAY provide the ability to update a patient-specific Health-Related Factors to re-activate a previously deactivated patient-specific Health-Related Factors.	138
	5. The system SHOULD provide the ability to link encounters, orders, medications and notes to one or more patient-specific Health-Related Factors.	139
	6. The system SHOULD provide the ability to capture a patient-specific Health-Related Factors using standardized coding schemes (e.g., a standardized Nursing Diagnosis coding system).	140
	7. The system SHOULD provide the ability to capture free text patient-specific Health-Related Factors and render them in a manner that distinguishes them from coded patient-specific Health-Related Factor entries.	141
	8. The system SHOULD tag and render an indicator that interaction checking will not occur against free text patient-specific Health-Related Factors.	142
	9. The system SHOULD provide the ability to manage free text comments associated with patient-specific Health-Related Factors.	143
	10. The system SHOULD provide the ability to link actions taken (e.g., placing an order for home health aid) and outcomes (e.g., family providing additional home support) with patient-specific Health-Related Factors (e.g., living alone).	144
CP.1.6 Function Manage Immunization List		145

Statement: Create and maintain patient-specific immunization lists.

Description: Immunization lists are managed over time, whether over the course of a visit or stay, or the lifetime of a patient. Details of immunizations administered are captured as discrete data elements including date, type, manufacturer and lot number. The entire immunization history is viewable.

	1. The system SHOULD provide the ability to manage all immunizations associated with a patient.	146
	2. The system SHOULD provide the ability to maintain immunization details, as discrete data, including: - the immunization name/type, seqeunce number in the series & series identifier, strength and dose; - the date and time of administration; - manufacturer, lot number, expiration date, - route and site of administration; - administering provider; - observations, reactions and complications; - reason immunization not given, and/or immunization related activity not performed; according to scope of practice, organizational policy, and/or jurisdictional law.	147

Section/Id#: Type: Name:	Conformance Criteria	Row#
	3. The system SHALL provide the ability to manage, as discrete elements, data associated with an immunization that was not given to a patient (e.g., due to a contraindication or a patient's refusal). Data associated with an immunization that was not given to a patient includes date-and-time, immunization type, series, exception reason, and immunization-withholding provider.	148
	4. The system SHALL provide the ability to render (e.g., print or transmit) a report of a patient's immunization history (e.g., for appropriate authorities such as schools, day-care centers or public health immunization registries) according to scope of practice, organizational policy, and/or jurisdictional law.	149
	5. The system SHALL provide the ability to capture the currently recommended date for a companion immunization (e.g., a subsequent or booster dose) with each immunization (if such a companion immunization is needed).	150
	6. The system SHALL provide the ability to capture, maintain and render population-based immunization schedules from relevant public health immunization authorities (e.g., CDC for US realm).	151
CP.1.7 Function Manage Medical Equipment, Prosthetic/Orthotic, Device List		152
Statement: Create and maintain a patient-specific list of medical equipment, medical prosthetic, orthotic, and/or implantable devices. **Description:** Details of medical equipment, orthotic/prosthetic, and/or devices are captured as discrete data elements including information such as device type, date issued, date implanted or manufactured, device model number, device serial/lot number, manufacturer, supplier, involved extremity, anatomical location, date of battery change, and other data elements which many be required to correctly identify and track the equipment/device. The list may link to external sources, such as the US Food and Drug Administration (FDA), so that the provider may be alerted if the medical device is recalled. The entire equipment, prosthetic, orthotic, and/or implantable device list is able to be rendered.		
	1. The system SHALL provide the ability to manage, as discrete data, a patient-specific list of specialized medical equipment, prosthetic, orthotic, and/or implantable devices.	153
	2. The system SHALL provide the ability to capture, maintain and render, as discrete data, the description of each instance of use of specialized medical equipment, prosthetic, orthotic, and/or implantable device.	154
	3. The system SHOULD provide the ability to capture, maintain and render the reason for each instance of use of specialized medical equipment, prosthetic, orthotic, and/or implantable device.	155
	4. The system SHALL provide the ability to capture, maintain and render the specific type of specialized medical equipment, prosthetic, orthotic, and/or implantable device.	156
	5. The system SHALL provide the ability to capture an indication of No Known specialized medical equipment, prosthetic, orthotic, and/or implantable device for the patient.	157
	6. The system SHOULD provide the ability to capture, maintain and render, as discrete data, information necessary to identify and track the equipment/device including, at a minimum: type, manufacturer, manufacture date, date implanted (or placed into service), date removed/discontinued, model/serial number, anatomical location and any unique device identifier (e.g., UDI in US).	158
	7. The system SHOULD provide the ability to tag as deactivated and capture reason for deactivation, an entry in the list when the specialized medical equipment, prosthetic, orthotic, or implantable device is no longer in use by the patient.	159
	8. The system MAY provide the ability to update an entry in the list to re-activate a previously deactivated specialized medical equipment, medical prosthetic, orthotic, or implantable device.	160
	9. The system SHALL provide the ability to render a list of deactivated specialized medical equipment, prosthetic, orthotic, or implantable devices including the reason for deactivation.	161
	10. The system MAY provide the ability to capture the date of the next scheduled equipment or device maintenance.	162
	11. The system MAY provide the ability to capture equipment or device maintenance instructions.	163
CP.1.8 Function Manage Patient and Family Preferences		164
Statement: Capture and maintain patient and family preferences. **Description:** This function is focused on the capture and maintenance of facts on patient/family preferences. Patient and family preferences regarding issues such as language, religion, spiritual practices and culture may be important to the delivery of care. It is important to capture these so that they will be available to the provider at the point of care. Patient/Family preferences differ from social history and Advance Directives as follows: Social history refers primarily to elements of a patient's background that may impact on the patient's health (e.g., smoking, drinking, occupation, abuse, etc.). Advance Directives refers to requests regarding care when the patient is unable to competently make decisions about their own care (e.g., Do Not Resuscitate orders, living wills).		
	1. The system SHALL provide the ability to manage patient preferences (e.g., language(s), religion, spiritual and cultural practices).	165
	2. The system SHALL provide the ability to manage family preferences (e.g., language(s), religion, spiritual and cultural practices).	166

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	3. The system SHOULD provide the ability to manage patient and family preferences based on business rules.	167
	4. The system SHOULD provide the ability to render, at appropriate decision points, patient and family preferences as they pertain to current and planned treatment plans and orders.	168
	5. The system SHOULD provide the ability to integrate patient and family preferences with appropriate health education materials (e.g., dietary advice based on dietary preference).	169
	6. The system SHOULD conform to function CPS.1.7.1 (Support for Patient and Family Preferences).	0
CP.1.9 Function Manage Adverse Events		170
Statement: Capture and maintain adverse events. **Description:** This function is focused on the capture and maintenance of adverse events that have occurred to the patient. The system should capture discrete information about the adverse event to enable the rendering Serious Adverse Event (SAE) reports according to organizational policy, and or jurisdictional law. Reporting may conform to the HL7 Individual Case Safety Reporting (ICSR).		
	1. The system SHALL provide the ability to manage adverse events associated with a patient.	171
	2. The system SHALL capture and maintain as discrete data an adverse event. For example:a) Patient identificationb) Event date/timec) Event descriptiond) Event severitye) Event category (e.g., medication error, fall)f) Care providers associated with the eventaccording to scope of practice, organizational policy, and/or jurisdictional law.	172
	3. The system SHALL provide the ability to capture and render a Serious Adverse Event (SAE) report according to organizational policy, and/or jurisditional law.	173
	4. The system MAY provide the ability to render a set of Serious Adverse Event (SAE) data as modeled by the current release of HL7 ICSR (Individual Case Safety Reporting).	174
CP.2 Function Render externally-sourced Information		175
Statement: Render documentation and data that has been captured from multiple external sources. **Description:** Documentation and data relevant to the patient record can be captured from many external sources and should be rendered appropriately alongside other information in the patient record. External sources are those outside the EHR system, including clinical, administrative, and financial information systems, other EHR systems, Personal Health Record (PHR) systems, and data received through health information exchange networks.		
	1. The system SHOULD provide the ability to render a tag that patient health information is externally sourced when such information is rendered.	0
CP.2.1 Function Render externally-sourced Clinical Documents		176
Statement: Render clinical documentation that has been captured from multiple external sources. **Description:** Documentation relevant to the patient record can be captured from many external sources and should be rendered appropriately alongside other information in the patient record.		
	1. IF the system conforms to CPS.2.1 (Support for externally-sourced Clinical Documents), THEN the system SHALL provide the ability to render externally-sourced clinical documents.	177
CP.2.2 Function Render externally-sourced Data		178
Statement: Render data that has been captured from multiple external sources. **Description:** Data relevant to the patient record can be captured from many external sources and should be rendered appropriately alongside other information in the patient record (e.g., product labeling information should be rendered alongside the patient's record).		
	1. IF the system conforms to CPS.2.2 (Support for externally-sourced Clinical data), THEN the system SHALL provide the ability to render externally-sourced clinical data.	179
CP.2.3 Function Render Emergency Medical System Originated Data		180
Statement: Render emergency medical data that has been captured from multiple external sources. **Description:** Emergency medical data relevant to the patient record can be captured from many external sources and should be rendered appropriately alongside other information in the patient record.		
	1. IF the system conforms to CPS.2.3 (Support Emergency Medical System Originated Data), THEN the system SHALL provide the ability to render Emergency Medical System Originated Data.	181
CP.2.4 Function		182

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Render externally-sourced Clinical Images		
	Statement: Render clinical images that has been captured from multiple external sources. **Description:** Clinical Images relevant to the patient record can be captured from many external sources and should be rendered appropriately alongside other information in the patient record.	
	1. IF the system conforms to CPS.2.4 (Support externally-sourced Clinical Images), THEN the system SHALL provide the ability to render externally-sourced clinical images.	183
CP.2.5 Function Manage Patient-Originated Data		184
	Statement: Capture and explicitly label patient-originated data, link the data source with the data, and support provider authentication for inclusion in patient health record as well as subsequent rendering of the information as part of the health record. **Description:** It is critically important to be able to distinguish clinically authored and authenticated data from patient-originated data that is either provided by the patient for inclusion in the EHR or entered directly into the EHR by the patient from clinically authenticated data. Patients may provide data for entry into the health record or be given a mechanism for entering this data directly. Patient-originated data intended for use by providers will be available for their use. Data about the patient may be appropriately provided by: 1. the patient; 2. a surrogate (parent, spouse, guardian) or 3. an informant (teacher, lawyer, case worker) 4. devices (e.g., blood pressure/sugar monitors). An electronic health record may provide the ability for direct data entry by any of these. Patient-originated data may also be captured by devices and transmitted for inclusion into the electronic health record. Data entered by any of these must be stored with source information. A provider must authenticate patient-originated data included in the patient's legal health record. A provider must be able to indicate they have verified the accuracy of patient-originated data (when appropriate and when a verification source is available) for inclusion in the patient record. Such verification does not have to occur at each individual data field and can be at a higher level of the data.	
	1. The system SHALL provide the ability to capture patient- originated data and tag that data as such.	185
	2. IF the system provides the ability for the patient to capture data directly, THEN the system SHALL tag the data as patient captured.	186
	3. The system SHALL provide the ability to render patient-originated data.	187
	4. The system SHOULD provide the ability for an authorized user to annotate, but not alter, patient-originated data.	188
	5. The system SHOULD provide the ability to capture patient-originated annotations on provider-sourced data, and tag the annotations as patient-sourced.	189
	6. IF the system conforms to CPS.2.1 (Support for externally-sourced Clinical documents), THEN the system SHALL provide the ability to render externally-sourced clinical documents.	190
CP.3 Header Manage Clinical Documentation		191
	Statement: Clinical Documentation must be managed including the capture of the documentation during an encounter, maintenance and appropriate rendering. **Description:** Clinical documentation includes all documentation that the clinician may capture during the course of an encounter with the patient or relevant to the patient. This includes assessments, clinical measurements, clinical documents and notes, patient-specific care and treatment plans. Management of clinical documentation also includes the acknowledgement and amendments of documentation provided by other providers.	
CP.3.1 Function Conduct Assessments		192
	Statement: Create and maintain assessment information. **Description:** During an encounter with a patient, the provider will conduct an assessment that is germane to the age, gender, developmental or functional state, medical and behavioral condition of the patient, such as growth charts, developmental profiles, and disease specific assessments. Wherever possible, this assessment should follow industry standard protocols although, for example, an assessment for an infant will have different content than one for an elderly patient. When a specific assessment template does not exist, a new, locally-defined assessment can be created, using the format and data elements of similar assessments whenever possible. (NOTE: A new assessment may not necessarily be unique, since a facility may copy an assessment from another facility.)	
	1. The system SHOULD provide the ability to manage assessment information captured (e.g., age, gender, developmental state, and health condition) according to scope of practice, organizational policy, and/or jurisdictional law.	195

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	2. The system SHOULD provide the ability to manage patient information captured using recognized-standard, and/or locally-defined assessments according to scope of practice, organizational policy, and/or jurisdictional law.	196
	3. The system SHOULD provide the ability to manage additional assessment information as the patient's medical condition changes.	197
	4. The system SHOULD provide the ability to link assessment information to a problem list according to scope of practice, organizational policy, and/or jurisdictional law.	198
	5. The system SHOULD provide the ability to transmit assessment information to an individual care plan according to scope of practice, organizational policy, and/or jurisdictional law.	199
	6. The system MAY provide the ability to receive assessment information from external sources (e.g., laboratory results and radiographic results) according to scope of practice, organizational policy, and/or jurisdictional law.	200
	7. The system SHOULD provide the ability to analyze and render assessment data compared with standardized curves (e.g., growth charts).	201
	9. The system SHOULD provide the ability to render appropriate assessment information as trends on a graph or a flowsheet.	202
	8. The system SHOULD provide the ability to exchange data between an assessment and a medication list.	203
	10. The system SHOULD provide the ability to analyze assessment information using clinical prediction rules (e.g., the Glasgow Coma Score or Well's score) and capture and render the results.	204
	11. The system SHOULD conform to function CPS.3.1 (Support for Standard Assessments).	205
	12. The system SHOULD conform to function CPS.3.2 (Support for Patient Context-Driven Assessments).	206
	13. The system SHOULD provide the ability to render prior versions of completed recognized-standard, and/or locally-defined assessment information.	207
	14. The system SHOULD provide the ability to analyze the schedule of mandated assessments, render a proposed schedule, and capture the assessment appointments.	208
	15. The system MAY determine and render a proposed list of assessments based on context-related information (e.g., chief complaint, length of stay, abnormal vital signs, or response to medication).	209
	16. The system SHOULD provide the ability to capture, render and store assessment information and the final score as discrete data as appropriate.	210
	17. The system SHOULD provide the ability to analyze by comparing "elements of assessments captured by the clinician" to "those elements of assessments designated by the organization as best practice assessments, and/or evidence-based resources" and render the results of the analysis.	211
CP.3.2 Function Manage Patient Clinical Measurements		212

Statement: Capture and manage patient clinical measures, such as vital signs, as discrete patient data.

Description: Within the context of an episode of care, patient measures such as vital signs are captured and managed as discrete data to facilitate reporting and provision of care. Other clinical measures (such as expiratory flow rate, size of lesion, etc.) are captured and managed, and may be discrete data.

	1. The system SHALL provide the ability to capture patient vital signs (e.g., blood pressure, temperature, heart rate, respiratory rate, and pain scale) as discrete elements of structured or unstructured data.	213
	2. The system SHOULD provide the ability to capture other clinical measures (e.g., peak expiratory flow rate, size of lesions, oxygen saturation, height, weight, length, body mass index and severity of pain) as discrete elements of either structured or unstructured data.	214
	3. The system SHOULD provide the ability to determine additional values within an assessment based on discrete or atomic elements (e.g., Body Mass Index based on height and weight).	215
	4. The system SHOULD provide the ability to import or receive clinical measurements (e.g., bone density, bone age, cardiac rhythm) from an ancillary system or external device (e.g., Holter monitor) as discrete elements of either structured or unstructured data.	216
	5. The system SHALL provide the ability to capture mood, behavior and daily functioning as structured or unstructured data.	217
	6. The system SHOULD provide the ability to determine and render percentile values when data with normative distributions are entered.	218
	7. The system SHOULD provide the ability to determine based on information provided, normal ranges for numeric, as well as normal values for non-numeric, data (e.g., presence or absence of physical findings based on developmental stage) based on age and other parameters such as height, weight, ethnicity or gestational age.	219
	8. The system MAY provide the ability to render target clinical measurement values according to scope of practice, organizational policy, and/or jurisdictional law (e.g., mean target total blood cholesterol of 199 mg/dL as recommended by Public Health authorities).	220

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	9. The system SHALL provide the ability to capture both the time the clinical measurement was taken as well as the time it was entered into the system, including measurements from an ancillary system or external device.	221
	10. The system SHOULD provide the ability to capture, as discrete data, clinical measurement (including vital signs) contextual information (e.g., methods used for the vital signs measurements, position of patient).	222
	11. The system SHOULD provide the ability to render trends of clinical measurements.	223
	12. The system SHOULD provide the ability to render growth charts that include growth data (weight, length or height and head circumference) on a graph that includes normative data plotted against population-based normative curves by age ranges, gender and ethnicity of the respective normative data (e.g., females 0-36 months).	224
	13. The system SHOULD determine and render the number of standard deviations from the mean when data with normal distributions are captured.	225
	14. The system SHOULD provide the ability to capture, store and render data using different units of measurement (e.g., grams, kilograms and pounds).	226
	15. The system MAY provide the ability to capture and render clinical context for each data point on the growth chart (e.g., ventilated, receiving growth hormone, "Tanner Stage").	227
	16. The system MAY provide the ability to capture, maintain, and render patient maturity level measurements (e.g., using the "Tanner Stage" method).	228
	17. The system MAY provide the ability to determine post conceptional age (corrected age) for the purposes of decision support.	229
CP.3.3 Function Manage Clinical Documents and Notes		230

Statement: Create, addend, amend, correct, authenticate, maintain, present and close, as needed, transcribed or directly-entered clinical documentation and notes.

Description: Clinical documents and notes may be unstructured and created in a narrative form, which may be based on a template, graphic, audio, etc. The documents may also be structured documents that result from the capture of coded data. Each of these forms of clinical documentation is important and appropriate for different users and situations. To facilitate the management and documentation on how providers are responding to incoming data on orders and results, there may also be some free text or formal record on the providers' responsibility, and/or standard choices for disposition, such as Reviewed and Filed, Recall Patient, or Future Follow Up. The system may also provide support for documenting the clinician's differential diagnosis process.

	1. The system SHALL provide the ability to capture and render clinical documentation as 'structured', and/or 'unstructured' data.	231
	2. The system SHOULD present documentation templates (structured or free text) to facilitate creating documentation.	232
	3. The system SHOULD provide the ability to present existing documentation within the patient's EHR while creating new documentation.	233
	4. The system SHOULD provide the ability to link documentation with specific patient encounter(s) or event(s) (e.g., office visit, phone communication, e-mail consult, laboratory result).	234
	5. The system SHOULD provide the ability to render the list in a user-defined sort order.	235
	6. The system SHOULD provide the ability to link clinical documents and notes to one or more problems.	236
	7. The system SHALL provide the ability to update documentation prior to finalizing it.	237
	8. The system SHALL provide the ability to tag a document or note as final, according to scope of practice, organizational policy, and/or jurisdictional law.	238
	9. The system SHALL provide the ability to render all author(s) and authenticator(s) of documentation.	239
	10. The system SHOULD provide the ability to render designated documents based on metadata search and filter (e.g., note type, date range, facility, author, authenticator and patient).	240
	11. The system MAY provide the ability for providers to capture clinical document process disposition using standard choices (e.g., reviewed and filed, recall patient, or future follow-up).	241
	12. The system SHOULD provide the ability to capture, maintain and render the clinician's differential diagnosis and the list of diagnoses that the clinician has considered in the evaluation of the patient.	242
	13. The system SHOULD provide the ability to render clinical documentation using an integrated charting or documentation tool (e.g., notes, flow-sheets, radiology views, or laboratory views).	243
	14. The system SHOULD provide the ability to capture clinical documentation using specialized charting tools for patient-specific requirements (e.g., age - neonates, pediatrics, geriatrics; condition - impaired renal function; medication).	244
	15. The system SHOULD provide the ability to capture, maintain and render transition-of-care related information according to scope of practice, organizational policy, and/or jurisdictional law.	245
	16. The system SHOULD provide the ability to tag the status of clinical documentation (e.g., preliminary, final, signed).	246
	17. The system SHOULD provide the ability to tag and render lists of patients requiring follow up contact (e.g., laboratory callbacks, radiology callbacks, left without being seen).	247

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	18. The system SHOULD provide the ability to capture patient follow-up contact activities (e.g., laboratory callbacks, radiology callbacks, left without being seen).	248
	19. The system SHOULD provide the ability to save partially completed clinical documentation (i.e., without signature) for later editing and completion.	249
	20. IF the system provides the ability to save partially completed clinical documentation, THEN the system SHALL render this documentation only to the authorized users (e.g., author or author's supervisors).	250
	21. IF the system provides the ability to save partially completed clinical documentation, THEN the system SHOULD provide the ability to tag unsigned documentation.	251
	22. IF the system provides the ability to save partially completed clinical documentation, THEN the system SHOULD render a notification at specified intervals to the author.	252
CP.3.4 Function Manage Patient-Specific Care and Treatment Plans		253

Statement: Provide templates and forms for clinicians to use for care plans, guidelines and protocols during provision of care and care planning.

Description: During the provision of care, the clinician reviews and uses templates and forms to ensure consistent quality patient care. Care plans, guidelines or protocols may contain goals or targets for the patient, specific guidance to the providers, suggested orders, and nursing interventions, among other items, including alerts. Information such as Order sets for care plans may arrive from an external institution and need to be approved locally before being inserted into the care plan. Tracking of implementation or approval dates, modifications and relevancy to specific domains or context is provided. Transfer of treatment and care plans may be implemented electronically using, for example, templates, or by printing plans to paper.

	1. The system SHALL provide the ability to manage patient-specific plans of care and treatment.	254
	2. The system SHALL conform to function CP.7.1 (Present Guidelines and Protocols for Planning Care) and provide the ability to render locally or non-locally developed templates, guidelines, and protocols for the creation of patient-specific plans of care and treatment.	255
	3. The system SHOULD provide the ability to capture metadata regarding a patient's plan of care or treatment (e.g., authors, creation date, version history, references, local sources and non-local sources) according to scope of practice, organizational policy, and/or jurisdictional law.	256
	4. The system SHOULD provide the ability to link order sets with care plans.	257
	5. The system SHOULD provide the ability to link the care plan with condition(s) in problem lists.	258
	6. The system SHOULD provide the ability to determine and render order sets from care plans.	259
	7. The system MAY provide the ability to determine and render care plans from order sets.	260
	8. The system SHOULD provide the ability to transmit care plans and treatment plans to other care providers.	261
	9. The system SHOULD conform to function AS.5.1 (Clinical Task Creation, Assignment and Routing) to link care plan items into the tasks assigned and routed.	262
	10. The system SHOULD conform to function AS.5.3 (Clinical Task Linking) to link care plan items and tasks.	263
	11. The system SHOULD conform to function AS.5.4 (Clinical Task Status Tracking) to link care plan items with tasks tracked.	264
	12. The system SHOULD conform to function CPS.4.2.2 (Support for Patient-Specific Dosing and Warnings) to determine and render related warnings on drug dosing and interactions.	265
	13. The system MAY conform to function CPS.1.7.1 (Support for Patient and Family Preferences) to improve the effectiveness of care and treatment plans.	266
	14. The system MAY provide the ability to determine and render a care plan review schedule or conference schedule.	267
	15. The system SHALL provide the ability to capture, maintain and render, as discrete data, the reason for variation from rule-based clinical messages (e.g., alerts and reminders).	268
	16. The system SHOULD provide the ability to capture that a patient should not be on a generally recommended care plan and the reason why.	269
	17. The system SHALL provide the ability to capture care processes across the continuum of care.	270
	18. The system SHOULD provide the ability to render care processes from across the continuum of care.	271
	19. The system SHALL provide the ability to render internal care plans, guidelines, and protocols according to scope of practice.	272
	20. The system SHOULD provide the ability to render external care plans, guidelines, and protocols according to scope of practice, and/or organizational policy.	273
CP.3.5 Function Acknowledge/Amend Other Provider Documentation		274

Statement: Review and indicate or amend other caregiver notes as permitted.

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Description: Scan/review notes from physicians, nurses, technicians and other members of the health care team (e.g., Respiratory Therapist, Physical Therapist). Annotate for disparities, make additions/amendments and import when desired and permitted.	
	1. The system SHOULD provide the ability to tag documentation by another clinician as read according to scope of practice, organizational policy, and/or jurisdictional law.	275
	2. The system MAY provide the ability to tag agreement or disagreement with documentation by another provider according to scope of practice, organizational policy, and/or jurisdictional law.	276
	3. The system SHALL provide the ability for a user (e.g., supervising clinician) to annotate regarding his/her role in advising, and/or providing direct care according to scope of practice, organizational policy, and/or jurisdictional law.	277
	4. The system SHOULD provide the ability to capture and render a co-signature of documentation according to scope of practice, organizational policy, and/or jurisdictional law.	278
	5. The system MAY provide the ability to capture the approval of documentation that was captured by another user according to scope of practice, organizational policy, and/or jurisdictional law.	279
CP.4 Function Manage Orders		280
	Statement: Provide the ability to manage clinical orders and results including medication, non-medication, diagnostic tests, blood products, other biologics and referrals, using order sets as appropriate. **Description:** The provision of clinical care includes the need to order from a variety of treatments using order sets as appropriate as well as reviewing the results of treatment. Orders for treatments may include medications, non-medication therapies (e.g., physical therapy, special diet, immunizations, non-allopathic regimens); diagnostic care (e.g., laboratory , radiology); blood products and other biologics (e.g., blood transfusions, human growth hormones). Patients are often referred to other health care providers for more specialized diagnostic workup, and/or treatment. An effective EHR-S must include support and management of these processes and associated documentation.	
	1. The system SHALL provide the ability to manage role-based, context-based, and/or user-based order entry.	281
	2. The system SHALL provide the ability to manage the creation, renewal, modification and discontinuation of orders.	282
	3. The system SHALL provide the ability to render relevant, patient-specific laboratory test results when entering an order.	283
	4. The system SHALL provide the ability to manage the status of an order (e.g., open, completed, in process).	284
	5. The system MAY provide the ability to capture, maintain and render order entry with an appropriate registration process when the identity of the patient is unknown or in an urgent situation.	285
	6. The system SHOULD provide the ability to manage standing orders or orders that may be submitted by providers other than licensed providers according to scope of practice, organizational policy, and/or jurisdictional law.	286
	7. The system SHALL provide the ability to capture and render problem/diagnosis as an element of an order.	287
	8. The system MAY provide the ability to capture, maintain and render, as discrete data, a diagnosis/problem code, and/or description associated with an order of any type (including prescriptions and medications ordered for administration).	288
	9. The system MAY provide the ability to link an order of any type (including medication order) with a related clinical problem(s), and/or diagnosis code(s) and description.	289
	10. The system SHALL provide the ability to annotate and render comments and instructions with an order.	290
	11. The system SHOULD provide the ability to annotate and render free text comments and instructions with an order (e.g., "Short draw, do CBC first").	291
	12. The system SHOULD provide the ability to tag frequently used and institutionally-approved order sets as "favorites" or "preferences" to facilitate retrieval and ordering.	292
	13. The system MAY provide the ability to manage orders submitted to or received from external organizations, and/or facilities such as Health Information Exchanges (HIEs) or regional Electronic Health Record Systems (EHR-Ss).	293
	14. The system SHALL render patient identifying information (e.g., the patient name, identification number, and age or date of birth) on all order screens, according to scope of practice, organizational policy, and/or jurisdictional law.	294
	15. The system SHALL provide the ability to capture, maintain and render an indicator of oral verification ("read-back") of the complete order by the person receiving the telephone or verbal order.	295
	16. The system SHALL provide the ability to capture and render the urgency status (e.g., As-Soon-As-Possible or STAT) associated with an order.	296
	17. The system SHOULD provide the ability to render order history for any order, including the ordering clinician, order details, date, and time.	297
	18. The system SHOULD provide the ability to tag and render a field as required for a complete order by order type (e.g., pediatric order for antibiotic that requires the patient's weight).	298

Section/Id#: Type: Name:	Conformance Criteria	Row#
	19. The system SHOULD provide the ability to tag orders to be activated at a future date and time including admission orders, discharge orders, and post-operative orders.	299
	20. The system MAY provide the ability to manage conditional orders that can be activated when certain criteria and conditions are met.	300
	21. The system SHALL provide the ability to capture, store and render the identity of all providers who signed an order including their name and credential identifier.	301
	22. The system SHOULD provide the ability to render a list of active orders for a patient.	302
	23. The system SHOULD provide the ability to render a list of orders by similar or comparable type (e.g., all radiology or all laboratory orders).	303
	24. The system SHOULD provide the ability to render outstanding orders for multiple patients, as opposed to outstanding orders for a single patient (e.g., all outstanding orders for a specific clinician or all outstanding orders for a care setting).	304
	25. The system SHOULD provide the ability to capture and transmit the provider's order cancellation request.	305
	26. The system SHOULD conform to function CPS.8.4 (Support for Communication between Provider and Patient, and/or the Patient Representative) to manage information regarding orders.	306
	27. The system SHALL provide the ability to determine and capture co-signatures for orders based upon roles (e.g., consulting physician) according to scope of practice, organizational policy, and/or jurisdictional law.	307
CP.4.1 Function Use Order Sets		308

Statement: Use Order Set templates to facilitate order entry by rendering the appropriate orders based on provider request, input or system configuration.

Description: Predefined order set templates may include medication and non-medication orders (e.g., diet, activities, nursing care, prescriptions and requests for investigations). They allow a care provider to choose common orders for a particular circumstance or disease state according to standards or other criteria such as provider preference. Recommended order set templates may be presented based on patient data or other contexts. Order Set templates may also allow the provider to modify (add/remove/change) orders during order entry for a particular patient.

	1. The system SHALL provide the ability to capture a set of actions, and/or items to be ordered for a patient using a predefined order set template.	309
	2. The system SHALL provide the ability to maintain a patient's orders as an order set.	310
	3. The system SHOULD provide the ability to render a patient's orders as an order set.	311
	4. The system MAY provide the ability to integrate patient information and order set templates to determine appropriate orders based on patient characteristics (e.g., abdominal pain for female patient of childbearing age would present pregnancy testing order set template).	312
	5. The system SHALL conform to function CPS.4.1 (Manage Order Set Templates).	313
	6. The system MAY provide the ability to determine and render the appropriate order set template based on disease, care setting, conditions, symptoms or medications.	314
	7. The system SHALL provide the ability to capture and integrate in an order set, various types of orders for a patient (e.g., medications, laboratory tests, imaging studies, procedures and referrals).	315
	8. The system SHOULD provide the ability to delete individual orders from an instance of an order set for an individual patient according to scope of practice, organizational policy, and/or jurisdictional law.	316
	9. The system SHOULD provide the ability to tag as deleted an individual order(s) from an instance of an order set for an individual patient according to scope of practice, organizational policy, and/or jurisdictional law.	317
	10. The system MAY provide the ability to integrate multiple order set templates, customizing and storing it as a new order set template according to scope of practice, organizational policy, and/or jurisdictional law.	318
	11. The system SHOULD provide the ability to link order set(s) with condition(s) on the patient's problem list.	319
CP.4.2 Function Manage Medication Orders		320

Statement: Create prescriptions or other medication orders with detail adequate for correct filling and administration. Provide information regarding compliance of medication orders with formularies. Provide drug utilization review functionality including alerts regarding drug interactions and allergies.

Description: Medications include prescribed and over the counter (OTC) drugs, allergy shots, oxygen, anesthetics, chemotherapy, and dietary supplements that were ordered, supplied, administered, or continued. Different medication orders, including new, discontinue, refill/continue, and renew require different levels and kinds of detail, as do medication orders placed in different situations. Administration or patient instructions are available for selection by the ordering clinician, or the ordering clinician is facilitated in creating such instructions. The system may allow for the creation of common content for prescription details. Appropriate time stamps for all medication related activity are generated. This includes series of orders that are part of a therapeutic regimen, e.g., Renal Dialysis, Oncology. When it comes to capturing the medication rationale, it is not mandatory that the provider always provide this information.

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	In addition, the system should present the clinician with clinical decision support functionality (such as the presentation of allergies, drug-drug interactions) during the medication ordering process. When a clinician places an order for a medication, that order may or may not comply with a formulary specific to the patient's location or insurance coverage, if applicable. Whether the order complies with the formulary should be communicated to the ordering clinician at an appropriate point to allow the ordering clinician to decide whether to continue with the order. Formulary-compliant alternatives to the medication being ordered may also be presented.	
	1. The System SHALL conform to CP.4.2.1 (Medication Interaction and Allergy Checking).	321
	2. The System SHALL conform to CP.4.2.2 (Patient-Specific Medication Dosing & Warnings).	322
	3. The System SHALL conform to CP.4.2.3 (Medication Order Efficiencies).	323
	4. The system SHALL conform to CP.4.2.4 (Medication Alert Overrides).	324
	5. The system SHALL provide the ability to capture medication order details as discrete data for correct filling, dispensing and administration of drug (e.g., dose, route, physical form, duration, SIG).	325
	6. The system SHALL provide the ability to maintain and render, as discrete data, medication orders including all the details adequate for correct filling, dispensing and administration (e.g., drug, dose, route, SIG).	326
	7. The system SHOULD provide the ability to capture medication order details including dose, route, frequency and comments as free text.	327
	8. The system SHOULD provide the ability to manage free text as part of a medication order or prescription (e.g., "this patient is unable to swallow large pills").	328
	9. The system SHOULD render fixed text (e.g., "Bio-hazard Warning") as part of a medication order according to organizational policy, and/or jurisdictional law.	329
	10. The system SHALL determine and render a notification to the provider that information required to compute a dose is missing or invalid.	330
	11. The system SHOULD provide the ability to capture patient's preference for medication usage (e.g., oral vs. injectable, generic vs. brand name) and present it to a provider at the time of medication ordering.	331
	12. The system SHOULD provide the ability to manage prescriptions using fractional units of medications (e.g., 1/2 tsp., 1/2 tablet).	332
	13. The system SHALL provide the ability to capture and maintain documentation regarding patient weight, including such terms as "unknown", before entering medication orders.	333
	14. The system SHOULD provide the ability to capture the administrative or clinical reasons/indications/ rationale for the medication(s) selected during order entry.	334
	15. The system SHALL provide the ability to determine and render the status of a medication order (e.g., for outpatient medication ordering: captured, verified, filled, or dispensed to patient; for inpatient: captured, verified, filled, or medication administered).	335
	16. The system MAY provide the ability to determine and render the status of medication dispensing.	336
	17. The system SHALL conform to function CP.1.3 (Manage Medication List) and update the appropriate medication list with the prescribed medications (in case of multiple medication lists).	337
	18. The system SHALL provide the ability to enter and maintain medication information supplied by the patient.	338
	19. The system MAY provide the ability to electronically capture medication information brought in by the patient (e.g., scanned bar code from an Rx label).	339
	20. The system SHOULD conform to function CPS.4.2.4 (Support for Medication Recommendations).	340
	21. The system SHOULD provide the ability to enter and maintain prescription information from an external source (e.g., transcribed information from a non-network provider) to fill or renew a prescription.	341
	22. The system MAY provide the ability to receive and maintain prescription information from an external source (e.g., electronically from a non-network provider) to fill or renew a prescription.	342
	23. The system SHOULD provide the ability to manage medication orders for uncoded medications.	343
	24. The system SHOULD provide the ability to manage medication orders for non-formulary medications (e.g., medications that are being studied, investigational products being used in research trials, and blind study protocols).	344
	25. The system MAY provide the ability to receive the patient's current medication list from pharmacy (directly) or via an intermediary network.	345
	26. The system SHALL provide the ability to order supplies associated with medication orders according to scope of practice, organizational policy, and/or jurisdictional law.	346
	27. The system SHOULD render a list of frequently-used patient medication administration instructions.	347
	28. IF the system renders a list of frequently-used patient medication administration instructions, THEN the system SHOULD capture the ordering clinician's selection.	348
	29. The system MAY render a list of medication administration instructions common to multiple orders for the patient.	349
	30. IF the system renders a list of medication administration instructions common to multiple orders for the patient, THEN the system SHOULD capture the ordering clinician's selection.	350
	31. The system SHOULD provide the ability to render patient instructions that are linked to an ordered medication.	351

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	32. The system SHOULD conform to function AS.9.2 (Support Financial Eligibility Verification) to capture and render the results of electronic prescription eligibility and health plan/payer formulary verification of prescription coverage.	352
	33. The system SHOULD conform to function AS.9.2 (Support Financial Eligibility Verification) to capture and render patient-specific health plan/payer formulary and benefit coverage.	353
	34. The system SHOULD provide the ability to transmit a request for a patient's prescription drug insurance eligibility verification.	354
	35. The system SHALL provide the ability to manage orders that contain discrete medication components to create combination drugs or compounds (e.g., Butalbital compound).	355
	36. The system MAY provide the ability to maintain a constraint on the number of times that a prescription is transmitted for printing/reprinting and faxing/re-faxing, according to scope of practice, organizational policy, and/or jurisdictional law (e.g., limited print of narcotic prescription to 1 time).	356
	37. The system SHALL track the number of times that a prescription was transmitted (to maintain a constraint on the number of times that a prescription is permitted to be transmitted for printing/ reprinting and faxing/re-faxing).	357
	38. The system MAY provide the ability to render prescriptions for printing/reprinting, according to scope of practice, organizational policy, and/or jurisdictional law.	358
	39. The system MAY provide the ability to render prescriptions for faxing/re-faxing, according to scope of practice, organizational policy, and/or jurisdictional law.	359
	40. The system MAY provide the ability to render the associated problem, diagnosis or condition (indication) on the printed prescription according to scope of practice, organizational policy, and/or jurisdictional law.	360
	41. The system SHOULD provide the ability to render a list of transmission options for a prescription/ medication order to a specified pharmacy (e.g., printing, faxing, e-prescribing).	361
	42. The system SHOULD provide the ability to capture, maintain, and present the patient's consent to have restricted medications administered (e.g., Risk Evaluation and Mitigation Strategy (REMS) for research protocol and experimental drugs).	362
	43. The system SHOULD provide the ability to present information received through health plan/payer formulary checking (e.g., formulary alternatives, formulary status, co-pay and coverage types, prior authorization requirements, step therapy requirements, age limits, gender limits, quantity limits, age, gender, summary resource links and drug-specific resource links).	363
	44. The system SHOULD provide the ability to capture and render an indicator of an explicit route for the administration of specific medications during the ordering process.	364
	45. The system SHOULD render available alternate medication administration routes during the medication ordering process when multiple routes exist and none was specified.	365
CP.4.2.1 Function Medication Interaction and Allergy Checking		366

Statement: Provide alerts for potential medication interactions and medication allergy reactions.

Description: Check and provide alerts at the time of medication order based upon coded, active and non-active medications for possible interactions, allergies, sensitivities, intolerances, and other adverse reactions.

	1. The system SHALL conform to function CPS.4.2.1 (Support for Medication Interaction and Allergy Checking) to determine allergic reactions, drug-drug interactions, and other potential adverse reactions, and render alerts or notifications when new medications are ordered.	367
	2. The system SHALL conform to function CP.1.2 (Manage Allergy, Intolerance and Adverse Reaction List) to provide the ability to manage interaction and allergy checking and render alerts and notifications when new medications are ordered.	368
	3. The system MAY provide the ability to render an alert, at the time a new medication is prescribed/ ordered, that drug interaction, allergy, and formulary checking will not be performed against uncoded or free text medication(s).	369
	4. The system MAY provide the ability to render a notification, at the time a new uncoded medication is prescribed/ordered, that drug interaction, allergy, and formulary checking will not be performed, according to scope of practice, organizational policy, and/or jurisdictional law.	370
	5. The system SHALL provide the ability to render and tag as inactive recently inactivated medications for inclusion in current medication screening according to scope of practice, organizational policy, and/or jurisdictional law.	371
CP.4.2.2 Function Patient-Specific Medication Dosing and Warnings		372

Statement: Render medication dosing and warnings related to a medication order based on patient-specific parameters.

Description: Provide parameter-based (e.g., weight, lean body mass, age, sensitivity, genomics, body surface area) medication dosing recommendations and warnings for simple medications and compounded medications at the time of order entry.

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	1. The system SHALL conform to function CPS.4.2.2 (Support for Patient-Specific Dosing and Warnings) to determine potential adverse reactions and render alerts or notifications when new medications are ordered.	373
	2. The system SHOULD provide the ability to determine and render weight-specific dose suggestions and auto-populate (e.g., default) medication orders based on the suggested dosage.	374
	3. The system MAY provide the ability to capture alternative patient dosing weight(s) (e.g., ideal body weight or dry weight vs. actual patient weight) for the purpose of dose calculation.	375
	4. IF the system provides the ability to capture alternative patient dosing weight(s), THEN the system SHOULD provide the ability to determine and render alternative weight-specific dose recommendations and auto-populate medication orders based on the suggested dosage.	376
	5. The system SHOULD provide the ability to render patient-specific medication dosing recommendations based on the patient's age and weight/body surface area.	377
	6. The system MAY provide the ability to render patient-specific medication dosing recommendations based on previous patient experience (e.g., adverse reaction, type, and severity) with the same medication.	378
	7. The system SHOULD provide the ability to determine weight-based medication dosing when doses are based on the patient's weight (e.g., mg/kg).	379
	8. The system MAY provide the ability to determine and render medication orders in which the weight-specific dose suggested employs a starting range with incremental changes toward a target range (e.g., a target therapeutic index).	380
	9. The system MAY render a notification requesting the parameters (e.g., coefficients, exponents, formulas) required to calculate the body surface area.	381
	10. The system MAY provide the ability to determine and present dose ranges based on patient age.	382
	11. The system MAY provide the ability to manage complex medication orders that include dosing based on either physical status or laboratory values.	383
	12. The system SHALL provide the ability to determine and present drug dosing based on custom compounded medication components.	384
	13. The system SHOULD provide the ability to manage medication orders with patient-specific dose calculations (e.g., by weight, body surface area or genotype).	385
CP.4.2.3 Function Medication Order Efficiencies		386
Statement: Provide the tooling necessary to increase the efficiency of medication ordering. **Description:** Make medication ordering workflows more efficient by allowing medications to be sorted and reviewed by key attributes (e.g., generic or trade names). Also support editing medication orders across multiple instances of an order and capturing medication orders in order sets.		
	1. The system SHOULD provide the ability to present a list of medications based on an attribute of the medication (e.g., partial medication name, therapeutic class, or formulary).	387
	2. The system SHOULD provide the ability to present a list of medications based on an attribute of the patient (e.g., proposed treatment, patient condition, order set, age, gender).	388
	3. The system SHOULD provide the ability for the clinician to edit medication administration instructions and link it to the corresponding instances of that medication order.	389
	4. The system SHOULD provide the ability to extract, update and store a prescription reorder by allowing a prior prescription to be reordered without re-entering previous data (e.g., administration schedule, quantity, SIG).	390
	5. The system SHOULD provide the ability to extract, update and store a prescription reorder from a prior prescription using the same dosage but allowing for editing of details adequate for correct filling and administration of medication (e.g., dose, frequency, body weight).	391
	6. The system MAY provide the ability to extract, update and store a prescription renewal from a prior prescription using a different dosage but allowing for editing of details adequate for correct filling and administration of medication (e.g., dose, frequency, body weight).	392
	7. The system SHALL conform to CP.4.1 (Use Order Sets).	393
	8. The system SHALL provide the ability to extract and render medications by generic, and/or brand name.	394
CP.4.2.4 Function Medication Alert Overrides		395
Statement: Capture the alerts and warnings for medications being overridden and reasons for the override. **Description:** Alerts are generated for possible contraindications to administration of medications (e.g., the administration of tetracycline to pregnant women) and the prescriber may choose to override the alert.		
	1. The system SHALL provide the ability to edit a medication order by overriding the drug alert or warning and transmitting the updated medication order.	396

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	2. The system SHALL provide the ability to capture reasons for overriding a drug alert or warning at the time of ordering.	397
	3. The system SHALL provide the ability to tag and render an indication that a provider has overridden a drug alert or warning.	398
CP.4.3 Function Manage Non-Medication Patient Care Orders		399
Statement: Enable the origination, documentation, capture, transmission, tracking and maintenance of non-medication patient care orders. **Description:** Non-medication orders that request actions or items can be captured and tracked including new, renewal and discontinue orders. Examples include orders to transfer a patient between units, to ambulate a patient, for medical supplies, wound care, durable medical equipment, home IV, and diet or therapy orders. Additionally, psychotherapy and other mental health counseling, behavioral counseling (e.g., smoking cessation, alcohol treatment) other surgical and non-surgical procedures, and complementary alternative medicine are included in non-medication treatments. Each item ordered includes the appropriate detail, such as order identification and instructions. Orders should be communicated to the correct service provider for completion.		
	1. The system SHALL provide the ability to manage non-medication patient care orders for an action or item.	400
	2. The system SHALL provide the ability to capture and render order detail for correct order fulfillment.	401
	3. The system SHALL provide the ability to manage the status (e.g., active, discontinued, requisitioned, completed) of the ordered action or item.	402
	4. The system SHOULD provide the ability to capture a future date for an ordered action or item.	403
	5. The system SHOULD provide the ability to capture and render a set of patient instructions that will be provided to the patient for correct order fulfillment.	404
	6. The system SHOULD provide the ability to transmit the order for fulfillment.	405
	7. The system SHOULD provide the ability to link non-medication orders to a medication order (e.g., ordering an intravenous pump in coordination with intravenous medication).	406
	8. The system SHOULD provide the ability to store a task to be recurrent at a defined interval for a specified length of time.	407
	9. The system SHALL conform to function CPS.4.3 (Support for Non-Medication Ordering).	408
CP.4.4 Function Manage Orders for Diagnostic/ Screening Tests		409
Statement: Enable the origination, documentation, transmission, tracking and maintenance of orders for diagnostic tests. **Description:** Orders for diagnostic tests (e.g., diagnostic radiology, laboratory) are captured and tracked including new, renewal and discontinue orders. Each order includes appropriate detail, such as order identification, instructions and clinical information necessary to perform the test. Orders and supporting detailed documentation shall be communicated to the service provider for completion of the diagnostic test(s).Some systems may contain instructions, but in some settings, instructions may be provided from external sources (e.g., handouts).		
	1. The system SHALL provide the ability to manage orders for diagnostic tests.	410
	2. The system SHALL provide the ability to capture and render standard order detail for diagnostic test order fulfillment.	411
	3. The system SHOULD provide the ability to capture and maintain user-created instructions, and/or prompts when ordering diagnostic tests or procedures.	412
	4. The system SHALL provide the ability to manage the status (e.g., requisitioned, completed, in process) of diagnostic test(s).	413
	5. The system SHOULD provide the ability to capture and render patient instructions relevant to the diagnostic test ordered.	414
	6. The system SHALL provide the ability to transmit orders to the recipient (s) for order fulfillment of the diagnostic test.	415
	7. The system SHOULD provide the ability to transmit supporting detailed documentation to the recipient (s) for order fulfillment of the diagnostic test.	416
	8. The system SHALL conform to function CPS.4.3 (Support for Non-Medication Ordering).	417
	9. The system MAY provide the ability to transmit order activity to public health authorities according to scope of practice, organizational policy, and/or jurisdictional law.	418
	10. IF subsequent orders are being captured, THEN the system SHOULD provide the ability to render prior diagnostic results for a given patient.	419
	11. The system SHOULD capture and render complete patient demographic information for diagnostic orders according to scope of practice, organizational policy, and/or jurisdictional law.	420
	12. The system MAY provide the ability to include an indication (e.g., clinical rationale, reason, link to Problem list) for ordering the test(s).	421
CP.4.5		422

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Function Manage Orders for Blood Products and Other Biologics		
	Statement: Communicate with appropriate sources or registries to manage orders for blood products or other biologics. **Description:** Interact with a blood bank system or other source to support orders for blood products or other biologics including discontinuance orders. Use of such products in the provision of care is captured. Blood bank or other functionality that may come under jurisdictional law or other regulation (e.g., by the FDA in the United States) is not required; functional communication with such a system is required.	
	1. The system SHALL provide the ability to manage orders for blood products and biological products.	423
	2. The system SHALL provide the ability to manage the status (e.g., requisitioned, completed, in process) of blood product, and/or biological product orders.	424
	3. The system SHALL provide the ability to manage storage request orders for blood products, and/or biological products.	425
	4. The system SHALL provide the ability to manage the status of storage request orders (e.g., requisitioned, completed, in process) for blood products, and/or biological products.	426
	5. The system SHALL conform to function CPS.9.2 (Support for Inter-Provider Communication) to provide the ability to exchange blood product, and/or biological products between members of the care team.	427
	6. The system SHALL provide the ability to manage the use of blood products and other biologics in the provision of care.	428
	7. The system SHOULD provide the ability to manage information associated with the collection and administration of non-blood biologics (e.g., breast milk products), including donor and recipient, and/or patient-identifying data, aliquot-identifying data, amount, route (e.g., oral versus tube), expiration date and time of administration.	429
CP.4.6 Function Manage Orders for Referral		430
	Statement: Enable the origination, documentation and tracking of referrals between care providers or healthcare organizations, including clinical and administrative details of the referral, and consents and authorizations for disclosures as required. **Description:** Documentation and tracking of a referral from one care provider to another is supported, whether the referred to or referring providers are internal or external to the healthcare organization. Guidelines for whether a particular referral for a particular patient is appropriate in a clinical context and with regard to administrative factors such as insurance may be provided to the care provider at the time the referral is created. The EHR-S provides the ability to receive and act upon referral responses from providers. The EHR-S may provide the ability to capture completion of the referral appointment. Referrals may be received electronically (i.e. e-Referrals); or may be received non-electronically. If non-electronic, the system needs to allow the user to capture the referral information and manage referral request. If the system supports e-Referrals, then the system will also need to support additional functionality to manage the receipt of the referral request.	
	1. The system SHALL provide the ability to manage outbound referral(s), whether internal or external to the organization.	431
	2. The system SHALL provide the ability to capture clinical details necessary for the referral according to scope of practice of the referral recipient.	432
	3. The system SHALL provide the ability to link (e.g., link to image stored in PACS) clinical details as necessary for the referral according to scope of practice of the referral recipient.	433
	4. The system SHALL provide the ability to render clinical details as appropriate for the referral according to scope of practice of the referral recipient (e.g., clinical details required for dermatologist differ from those required by oncologist).	434
	5. The system SHOULD provide the ability to capture administrative details (e.g., insurance information, consents and authorizations for disclosure) as necessary for the referral.	435
	6. The system SHOULD provide the ability to link to administrative details (e.g., insurance information, consents and authorizations for disclosure) as necessary for the referral.	436
	7. The system SHOULD provide the ability to render administrative details (e.g., insurance information, consents and authorizations for disclosure) as necessary for the referral.	437
	8. The system SHALL provide the ability to capture, store, and render an inbound referral response (e.g., referral accepted, referral denied, or more information needed).	438
	9. The system SHALL provide the ability to determine and render recommended actions based on an inbound referral response (e.g., referral accepted, referral denied, or more information needed).	439
	10. The system MAY provide the ability to capture a notification that the patient fulfilled a referred appointment.	440
	11. The system SHOULD provide the ability to determine and render diagnosis-based clinical guidelines for making a referral.	441
	12. The system SHOULD provide the ability to determine the contents of a referral order by rendering order sets for review by the provider.	442
CP.5 Function Manage Results		443

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Statement: Present, annotate, and route current and historical test results to appropriate providers for review. Provide the ability to filter and compare results.

Description: Results of tests are presented in an easily accessible manner to the appropriate providers. For example, flow sheets, graphs, or other tools allow care providers to view or uncover trends in test data over time. The provider may desire to annotate, filter, and/or compare results. In addition to making results viewable, it is often necessary to send results to appropriate providers using electronic messaging systems, pagers, or other mechanisms. In addition, the system may have the ability to redirect or copy specific test results to a specified individual. Documentation of notification is accommodated. Results may also be routed to patients electronically or non-electronically (e.g., by hard copy). Note: “Results” are understood as applying to any type of test, whether biological or psychological. Management of the results may also require the provider's communication of the results to the patient (see function CPS.8.4 (Support for Communications between Provider and the Patient, and/or the Patient's Representative)). There may also be a need to notify public health agencies based on the result. See function POP.2 (Support Population-based Epidemiological Investigation).

	Conformance Criteria	Row#
1.	The system SHALL provide the ability to manage test results in according to scope of practice, organizational policy, and/or jurisdictional law.	444
2.	The system SHALL provide the ability to render numerical and non-numerical current and historical test results.	445
3.	The system SHALL provide the ability to render results for an identified patient or group of patients.	446
4.	The system SHALL provide the ability to render results by factors that supports results management including type of test, critical indicator and abnormal indicator.	447
5.	The system SHALL provide the ability to tag and render normal and abnormal indictors for results based on data provided from the original data source.	448
6.	The system SHOULD provide the ability to render numerical results in flow sheets, graphical form or other views that allow comparison of results, and display values graphed over time.	449
7.	The system SHALL provide the ability to render results by date/time range including ordered date/time, specimen collection date/time and results received date/time.	450
8.	The system SHOULD provide the ability to tag new results received and render to the relevant providers (ordering, copy to) that new results have been received but not reviewed.	451
9.	The system SHOULD provide the ability to capture an indicator that a result has been rendered and acknowledged by a user.	452
10.	The system SHOULD provide the ability to transmit results to other care providers.	453
11.	The system MAY provide the ability to transmit results to patients by methods such as phone, fax, electronically or letter.	454
12.	The system MAY provide the ability to transmit results to an automated callback system.	455
13.	The system MAY provide the ability to capture and transmit a request for action to another provider(s).	456
14.	The system SHOULD conform to CPS.9.2 (Support for Inter-Provider Communication) to receive a request for action regarding a test result from another provider and to transmit an acknowledgement to that provider of the receipt of that provider's request for action.	457
15.	IF the system provides the ability to receive a request for action regarding a result from another provider, THEN the system MAY provide the ability to transmit an acknowledgement of the receipt of that provider's request for action.	0
16.	The system MAY provide the ability to render results in clinically logical sections (e.g., Pathology, Chemistry, Cytology).	458
17.	The system SHALL link results to the electronic order if the system contains the electronic order.	459
18.	The system SHOULD provide the ability to annotate a result.	460
19.	The system SHOULD provide the ability to link and render the results report to other data (e.g., images) with which it is associated.	461
20.	The system SHALL provide the ability to import and receive preliminary and final result reports from ancillary systems according to scope of practice, organizational policy, and/or jurisdictional law.	462
21.	The system SHALL provide the ability to import or receive preliminary and final results as discrete data from ancillary systems, when discrete data is sent from the ancillary system, according to scope of practice, organizational policy, and/or jurisdictional law.	463
22.	The system SHALL provide the ability to capture, maintain and render preliminary (e.g., "wet read") and final result reports according to scope of practice, organizational policy, and/or jurisdictional law.	464
23.	The system SHALL provide the ability to tag and render a notification to the appropriate health care team member(s) (using role-based or rule-based alerts) of clinically-significant results or result changes.	465
24.	The system SHOULD provide the ability to link results to a specific medical condition, medication or therapeutic class of medication.	466
25.	The system SHALL provide the ability to render non-diagnostic quality images.	467
26.	The system SHOULD provide the ability to link with Radiology Information Systems (RIS) or Picture Archiving & Communication Systems (PACS) to enable the presentation of diagnostic quality images.	468
27.	The system SHALL provide the ability to link one or more images to a result report.	469
28.	IF the system provides the ability to annotate a result, THEN the system SHALL render the annotation with subsequent views of that result.	470

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	29. The system SHOULD provide the ability to capture an annotation from the patient on a result and render the annotation with subsequent views of that result.	471
	30. The system SHALL determine that results were recieved for a patient who is no longer under the care of the ordering provider and tag and render a notification according to scope of practice, organizational policy, and/or jurisdictional law.	472
	31. The system MAY provide the ability to manage results of specific genetic tests, genetic markers, or findings according to scope of practice, organizational policy, and/or jurisdictional law and subject to patient's preferences and consent.	473
CP.5.1 Function Manage Results of Diagnostic Tests		474
Statement: Enable the receipt and display of results for diagnostics tests. **Description:** Diagnostic test results are received and should be stored and displayed while linked to the original order in the system.		
	1. The system SHOULD provide the ability to capture, maintain and render diagnostic results, including preliminary as well as final results.	475
	2. The system SHOULD provide the ability to capture, maintain and render microorganism information/ descriptions from laboratory results as free-text.	476
	3. The system SHOULD provide the ability to capture, maintain and render microbiology laboratory results (with sensitivity testing) using standard coding methodology according to scope of practice, organizational policy, and/or jurisdictional law.	477
	4. The system SHOULD provide the ability to capture, maintain and render laboratory results that identify new and emerging laboratory procedures (e.g., processes that examine emerging organisms, new processes that examine existing organisms).	478
	5. The system SHALL provide the ability to capture, maintain and render discrete diagnostic results received through an electronic interface.	479
	6. The system SHALL provide the ability to render indicators of normal and abnormal diagnostic results based on information provided from the original source (e.g., from a laboratory or radiology department).	480
CP.6 Header Manage Medication, Immunization and Treatment Administration		481
Statement: Provide the functionality required to support the management of medication and immunization administration. **Description:** Provide the functionality required to support the safe administration of medications or immunizations to a patient based on medical requirement and orders within the system. This includes presenting providers with the list of medications or immunizations that are to be administered to a patient, necessary administration information, and capture all required and relevant administration details.		
CP.6.1 Function Manage Medication Administration		482
Statement: Present providers with the list of medications that are to be administered to a patient, necessary administration information, and capture administration details. **Description:** In a setting in which medication orders are to be administered by a provider rather than the patient, the necessary information is presented including: the list of medication orders that are to be administered; administration instructions, times or other conditions of administration; dose and route, etc. The system shall securely relate medications to be administered to the unique identity of the patient (see CPS.1.1). Additionally, the provider can record what actually was or was not administered, whether or not these facts conform to the order. Appropriate time stamps for all medication related activity are generated.For some settings that administer complete sets of medications from a variety of providers' orders, it may be useful to provide an additional check for possible drug-drug or other interactions.The EHR system shall support the five “rights” - Right Patient, Right Drug, Right Dose, Right Route, Right Time.The system should report medication administration, where appropriate, to public health or disease management authorities (e.g., oncology related medication orders should be communicated or transmitted to a cancer registry).		
	1. The system SHALL provide the ability to render the list of medications that are to be administered.	483
	2. The system SHALL provide the ability to render the list of medications that are to be administered including all administration directions/instructions (SIG).	484
	3. The system SHOULD provide the ability to render medications as dispensed (including dose and quantity of dispensed units of medication).	485
	4. The system SHOULD provide the ability to tag the medications that are to be administered by the patient (i.e. self-administered).	486
	5. The system SHALL provide the ability to render the drug, dose, route, time and frequency of desired administration for all scheduled medications.	487
	6. The system SHOULD provide the ability to render a notification to the clinician when specific doses are due.	488

Section/Id#: Type: Name:	Conformance Criteria	Row#
	7. The system SHOULD provide the ability to render a notification when medication related activities are due (e.g., adjusting medication dosing based on patient condition, checking IV lines for infiltration).	489
	8. The system SHALL conform to function CPS.4.2.1 (Support for Medication Interaction and Allergy Checking) in order to determine and render allergies, drug-drug interactions, and other potential adverse reactions, when rendering medication administration information.	490
	9. The system SHALL conform to function CPS.4.2.2 (Support for Patient-Specific Dosing and Warnings) in order to determine and render other potential adverse reactions, when rendering medication administration information.	491
	10. The system SHALL provide the ability to capture and maintain the medication identification number of the drug administered to the patient (e.g., NDC number, lot numbers, expiration date).	492
	11. The system SHALL provide the ability to capture, maintain and render medication administration details as discrete data, including:(1) the medication name, strength and dose;(2) date and time of administration;(3) route and site;(4) administering provider(5) observations, reactions and complications(6) reason medication not given, and/or medication related activity not performed; according to scope of practice, organizational policy, and/or jurisdictional law.	493
	12. The system SHOULD provide the ability to capture the effectiveness of PRN or "as needed" doses after they have been administered.	494
	13. The system SHOULD provide the ability to render any clinical interventions or assessments required prior to medication administration.	495
	14. The system SHOULD provide the ability to render any clinical interventions or assessments required subsequent to medication administration.	496
	15. The system SHOULD provide the ability to securely link medication-related activities to the unique identity of the patient (e.g., verification of administration to correct patient).	497
	16. The system SHOULD provide the ability to capture the identification of medication samples dispensed, including lot number and expiration date.	498
	17. The system SHOULD support integrated point of care devices for patient and medication identification, such as barcode recognition verification of patients and medications.	499
	18. The system SHOULD provide the ability to render medication orders that have not been dispensed.	500
	19. The system SHOULD provide the ability to render medication orders that have not been administered.	501
	20. The system SHOULD render an alert, when rendering administration information, if a maximum individual or daily dose exists and further administration would cause these to be exceeded (e.g., in the case of a PRN order with weight-based or BSA-based dose limits).	502
	21. The system SHOULD provide the ability to render medications to be administered over a selectable date/time range.	503
	22. The system SHALL provide the ability to render the medication administration history including administering provider, date, and time.	504
	23. The system SHOULD provide the ability to render continuous infusions in a manner that distinguishes them from other discrete-dose medications (e.g., insulin drip versus subcutaneous insulin dose).	505
	24. The system SHOULD provide the ability to render PRN ("as needed") medications in a manner that distinguishes them from other medications.	506
	25. The system SHOULD provide the ability to annotate an individual scheduled medication dose and include the annotation as part of the legal medical record. (e.g., describe the dose to be administered based upon specific clinical indicators such as a sliding scale insulin order where the dose is based upon the patients current blood sugar level)	507
	26. The system SHALL provide the ability to render the medication order as written (i.e., exact clinician order language) when rendering administration information.	508
	27. The system SHALL provide the ability to capture and render patient-specific instructions or other free text related to the administration of the medication (e.g., use left-arm IV only)	509
	28. The system SHALL provide the ability to manage information regarding a second provider witness to co-document administration.	510
	29. The system SHOULD provide the ability to capture the documentation of medication administration using a barcode scanner or imaging scanner (e.g., scanner capable of reading two dimensional symbologies).	511
	30. The system SHOULD provide the ability to render an alert to the administering provider when an electronic identification device (e.g., barcode & scanner or RFID) is used to document the administration of the medication and one of the following is in error: right patient, right medication, right dose, right time, or right route or there has not been positive identification of the administering provider.	512
	31. The system SHOULD provide the ability to manage medication administration schedules on the record of medication administration - to allow user to adjust future authorized schedule as needed (e.g., delay, refused, unavailable).	513
	32. The system SHOULD provide the ability to render a notification to associated systems (e.g., pharmacy, ordering, food and nutrition services) of changes in schedules on the record of medication administration.	514
	33. The system SHOULD provide the ability to capture an acknowledgement from a user that a medication order has been reviewed including capturing the date, time and user credentials.	515

Section/Id#: Type: Name:	Conformance Criteria	Row#
	34. The system SHOULD provide the ability to capture documentation of medication administration prior to pharmacy review.	516
	35. The system SHALL provide the ability to capture, maintain and render as part of the medication administration record for infusions the actual date and times of the infusion including the start and stop times and any modifications to the infusion and the assessment status of the infusion.	517
	36. The system SHOULD provide the ability to capture, maintain, and render the patient's consent to have restricted medications administered, (e.g., Risk Evaluation and Mitigation Strategy (REMS)).	518
	37. The system MAY auto-populate the medication administration record as a by-product of verification of administering provider, patient, medication, dose, route and time according to scope of practice, organizational policy, and/or jurisdictional law.	519
	38. The system SHOULD provide the ability to capture, maintain, and present physiological parameters or task completion that must be checked and recorded prior to medication administration.	520
	39. The system SHOULD provide the ability to capture and maintain documentation that the right patient, right medication, right dose, right time, and right route were verified (e.g., using positive ID technology such as bar code scanning) at the time of administration.	521
	40. The system MAY provide the ability to render a medication unique identifier (e.g., NDC, Structured Products Label (SPL) in the U.S. Realm or other standard product identifiers) according to jurisdictional law.	522
CP.6.2 Function Manage Immunization Administration		523

Statement: Capture and maintain discrete data concerning immunizations given to a patient including date administered, type, manufacturer, lot number, and any allergic or adverse reactions. Facilitate the interaction with an immunization registry to allow maintenance of a patient's immunization history.

Description: During an encounter, recommendations based on accepted immunization schedules are presented to the provider. Allergen and adverse reaction histories are checked prior to giving the immunization. If an immunization is administered, discrete data elements associated with the immunization including date, type, immunization expiration date, manufacturer and lot number are recorded. Any new adverse or allergic reactions are noted. If required, a report is made to the public health immunization registry or other organization (e.g., military unit commander, refugee program leadership). This function should include the ability to use GTIN barcode scanners to capture vaccine information (NDC, lot number, expiration date).

	1. The system SHALL provide the ability to capture immunization administration details as discrete data, including:(1) the immunization name/type, series, strength and dose;(2) date and time of administration;(3) manufacturer, lot number, expiration date,(4) route and site of administration; (5) administering provider;(6) observations, reactions and complications;(7) reason immunization not given, and/or immunization related activity not performed;according to scope of practice, organizational policy, and/or jurisdictional law.	524
	2. The system MAY auto-populate the immunization administration record as a by-product of verification of administering provider, patient, medication, dose, route and time according to scope of practice, organizational policy, and/or jurisdictional law.	525
	3. The system SHALL provide the ability to determine and render required immunizations, and when they are due, based on widely accepted immunization schedules, when rendering encounter information.	526
	4. The system SHOULD provide the ability to capture, in a discrete field, an allergy/adverse reaction to a specific immunization.	527
	5. The system SHALL conform to function CP.3.2 (Manage Patient Clinical Measurements) to capture other clinical data pertinent to the immunization administration (e.g., vital signs).	528
	6. The system SHOULD provide the ability to link standard codes (e.g., LOINC, SNOMED or other jurisdictionally-specific codes) with discrete data elements associated with an immunization.	529
	7. The system SHALL provide the ability to maintain a patient-specific immunization schedule.	530
	8. The system SHALL provide the ability to render a patient's immunization history upon request for appropriate authorities such as schools or day-care centers.	531
	9. The system SHALL conform to function CP.1.2 (Manage Allergy, Intolerance and Adverse Reaction List).	532
	10. The system SHOULD transmit required immunization administration information to a public health immunization registry according to scope of practice, organizational policy, and/or jurisdictional law.	533
	11. The system SHOULD exchange immunization histories with public health immunization registries or Immunization Information Systems according to scope of practice, organizational policy, and/or jurisdictional law.	534
	12. The system SHOULD harmonize Immunization histories with a public health immunization registry or Immunization information Systems according to scope of practice, organizational policy, and/or jurisdictional law.	535
	13. The system SHOULD capture and render immunization histories from a public health immunization registry or Immunization Information Systems including immunization administration recommendations.	536
	14. The system SHALL conform to function CP.1.6 (Manage Immunization List).	537

Section/Id#: Type: Name:	Conformance Criteria	Row#
	15. The system SHOULD provide the ability to update immunization histories at the time of capturing an immunization administration.	538
	16. The system SHALL provide the ability to render an immunization order as written (e.g., exact clinician order language or as mandated - such as by a public health requirement), when rendering administration information.	539
	17. The system SHALL provide the ability to determine due and overdue ordered immunizations including earliest through latest date ranges and render a notification according to organizational policy, and/ or jurisdictional law.	540
	18. The system SHALL provide the ability to render a patient educational information regarding the administration (e.g., Vaccine Information Statement (VIS).	541
	19. The system SHALL provide the ability to capture that patient educational information (e.g., VIS) was provided at the time of immunization administration.	542
	20. The system SHOULD provide the ability to capture that patient educational information (e.g., VIS) was provided at the time of the immunization including to whom the information was provided and the date/time that it was provided.	543
	21. The system SHOULD provide the ability to capture and maintain immunization refusal reasons as discrete data.	544
	22. The system SHOULD provide the ability to capture patient preferences regarding receipt of immunization (e.g., refusal of certain vaccines) at time of immunization administration.	545
CP.6.3 Function Manage Treatment Administration		546

Statement: Provide the functionality required to support the management of treatment administration and documentation. (Treatment defined as the administration or application of remedies to a patient for a disease or injury; medicinal or surgical management; therapy.)

Description: Provide the functionality required to support the documentation of non-medication treatments (e.g., wound dressing change that includes use of a topical cream or sterile wash during that process) to a patient based on clinical needs and requirements and provider orders within the system. This includes presenting end users with the list of clinical treatments that are to be administered to a patient, necessary administration information, and capture all required and relevant documentation details.

	1. The system SHALL provide the ability to render the list of treatments that are to be administered within a specified time frame and including all administration directions/instructions.	547
	2. The system SHALL conform to CP.6.1 (Medication Administration) to support the administration of medications as part of the treatment administration.	548
	3. The system SHOULD provide the ability to render all medications associated with the treatment as given or administered (including dose and quantity of dispensed units of medication).	549
	4. The system SHOULD provide the ability to tag the treatments that are to be administered by the patient (i.e. self-administered).	550
	5. The system SHALL provide the ability to render the information necessary to adminster the treatment (e.g., body site, time and frequency).	551
	6. The system SHALL provide the ability to document multiple body sites of desired administration for all scheduled treatments.	552
	7. The system SHOULD provide the ability to render a notification when treatments are due.	553
	8. The system SHALL provide the ability to capture, maintain and render details associated with the treatment as discrete data, including: treatment; date and time of treatment; site; administering provider; observations, reactions and complications; and reason treatment not given, and/or related activity not performed;according to scope of practice, organizational policy, and/or jurisdictional law.	554
	9. The system SHOULD provide the ability to capture, maintain and render details associated with continuous treatments (e.g., infusions, tube feedings, bladder irrigations, suction levels).	555
	10. The system SHALL provide the ability to capture, maintain and render details associated with treatments (including routinely scheduled, "one-time", "on-call" and "PRN") in a manner that distinguishes them from other types of treatments according to scope of practice.	556
	11. The system SHOULD provide the ability to capture information regarding the effectiveness of treatment at the time of administration of the treatment (e.g., patient's immediate response to bronchodilator therapy).	557
	12. The system SHOULD provide the ability to render any clinical interventions or assessments required prior to the treatment.	558
	13. The system SHOULD provide the ability to render any clinical interventions or assessments required subsequent to the treatment.	559
	14. The system SHALL provide the ability to capture verification of patient identity prior to administration of the treatment.	560
	15. The system SHOULD provide the ability to capture verification of patient identity using integrated point of care devices (e.g., barcode) prior to administration of the treatment.	561
	16. The system SHOULD provide the ability to render treatment orders that have not been administered.	562
	17. The system SHOULD provide the ability to render treatments to be administered over a selectable date/time range.	563

Section/Id#: Type: Name:	Conformance Criteria	Row#
	18. The system SHALL provide the ability to render the treatment administration history including administering provider date and time.	564
	19. The system SHALL provide the ability to render prior treatment history (including treatment assessment data and patient response) prior to the administration of the treatment.	565
	20. The system SHOULD provide the ability to annotate an individual scheduled treatment and include the annotation as part of the legal medical record(e.g., describe the treatment to be administered based upon specific clinical indicators).	566
	21. The system SHALL provide the ability to render the treatment order as written (i.e., exact clinician order language) when rendering treatment specific information including special instructions.	567
	22. The system SHALL provide the ability to capture and render patient-specific instructions related to the treatment.	568
	23. The system SHALL provide the ability to manage information regarding a second provider witness to co-document treatment.	569
	24. The system SHOULD provide the ability to capture the documentation of treatment administration using a barcode scanner or imaging scanner (e.g., scanner capable of reading two-dimensional symbologies).	570
	25. The system SHOULD provide the ability to render an alert to the administering provider when an electronic identification device (e.g., barcode & scanner or Radio Frequency Identifier (RFID)) is used to document treatment and one of the following is in error: right patient, right treatment, right time and right method or there has not been positive identification of administering provider.	571
	26. The system SHOULD provide the ability to manage treatment schedules (e.g., adjustments for delay, refused, unavailable).	572
	27. IF the system provides the ability to manage treatment schedules, THEN the system SHALL provide the ability to render a notification of a change in the treatment schedule.	573
	28. The system MAY provide the ability to auto-populate details associated with the treatment administration from the treatment order information.	574
	29. The system SHOULD conform to CP.1.2 (Manage Allergy, Intolerance and Adverse Reaction List) to capture an reaction to a specific treatment.	575
	30. The system SHOULD provide the ability to capture that patient educational information was provided at the time of the treatment including to whom the information was provided.	576
	31. The system SHALL conform to function CP.3.2 (Manage Patient Clinical Measurements) to capture other clinical data pertinent to the treatment (e.g., vital signs, blood glucose reading).	577
	32. The system SHOULD provide the ability to capture that a treatment has not been administered including the reason for not administering (e.g., patient refusal).	578
	33. The system SHOULD provide the ability to exchange treatment information with other related systems (e.g., pharmacy, laboratory).	579
	34. The system SHOULD conform to CPS.1.7 (Preferences, Directives, Consents and Authorizations) in order to capture the patient's preferences regarding receipt of treatment (e.g., refusal of certain materials/supplies) at the time of treatment administration.	580
	35. The system SHOULD capture and maintain user preferences for how the list of treatments are rendered.	581
CP.7 Header Manage Future Care		582
Statement: Provide the functionality to manage treatment and care planning through presentation of guidelines and protocols as well as managing recommendations for future care. **Description:** The presentation of appropriate guidelines and protocols for future care and the capture and management of recommendations for future care are required to ensure lifetime care of the patient. This includes the management of recommendations for post-encounter care and linkage of recommendations to other components in the health record such as the problem lists and other source documentation.		
CP.7.1 Function Present Guidelines and Protocols for Planning Care		583
Statement: Present organizational guidelines for patient care as appropriate to support planning of care, including order entry and clinical documentation. **Description:** Guidelines, and protocols presented for planning care may be site specific, community or industry-wide standards.		
	1. The system SHALL provide the ability to present current guidelines and protocols to providers who are creating plans for treatment and care.	584
	2. The system SHOULD provide the ability to render a guideline or protocol based on appropriate criteria (such as problem or medication).	585
	3. The system SHALL provide the ability to render previously used guidelines and protocols for historical or legal purposes.	586

Section/Id#: Type: Name:	Conformance Criteria	Row#
	4. IF decision support prompts are used to support a specific clinical guideline or protocol, THEN the system SHALL conform to function CPS.3.8 (Manage Documentation of Clinician Response to Decision Support Prompts).	587
	5. IF the system supports context sensitive care plans, guidelines and protocols, THEN the system SHALL conform to function CPS.3.4 (Support for Context-Sensitive Care Plans, Guidelines, Protocols).	588
CP.7.2 Function Manage Recommendations for Future Care		589
Statement: Document and support the management of the disposition process for a patient by managing recommendations for future care. **Description:** Patient encounters or treatments can end in many different states and support for these requires that the EHR support the ability to capture and maintain recommendations for the further future care of the patient. The EHR should accommodate, at a minimum, the following possible recommendations for future care (or dispositions) along with other supporting information for the recommendations: - discharge, - admission, - transfer, - death, - left without being seen (LWBS), - left without treatment (LWOT), - elopements (i.e. leaving without notifying the facility or wandering), - left against medical advice (AMA), - patients triaged to other clinics, and - administrative errors.		
	1. The system SHALL provide the ability to capture recommendations for future care as discrete data elements including the recommending provider and an alert date for the recommendation to take effect.	590
	2. The system SHALL provide the ability to maintain recommendations and associated recommendation meta-data (e.g., date of alert).	591
	3. The system SHALL provide the ability to render an alert of the recommendation based on the date associated with the recommendation (e.g., if recommendation is to "book appointment for physical therapy in 2 weeks" - alert will be triggered in 1.5 weeks for follow-up).	592
	4. The system SHALL provide the ability to capture recommendations for future care or post-encounter disposition from encounter and diagnostic studies imported in structured documents.	593
	5. The system SHOULD provide the ability to capture recommended actions for future care along with the recommending provider, the date recommended and the date suggested to carry out the recommendation.	594
	6. The system SHOULD provide the ability to link the recommendation for future care with the original documentation of that recommendation.	595
	7. The system SHOULD provide the ability to link the recommendation with condition(s) on the Problem List.	596
CP.8 Header Manage Patient Education & Communication		597
Statement: Provide the functionality to effectively communicate with the patient regarding their care and document the communication as part of the patient's medical record. **Description:** During an encounter with a patient or when any medical decision is made that affects the patient and requires action from the patient it is necessary to communicate effectively with the patient (or their representative) to ensure that they can participate appropriately in their care. This includes providing instructions pertaining to preparation for a procedure, self-administration of medications and self care.		
CP.8.1 Function Generate, Record and Distribute Patient-Specific Instructions		598
Statement: Generate and record patient-specific instructions related to pre- and post-procedural and post-treatment/discharge requirements. **Description:** When a patient is scheduled for a test, procedure, or discharge, specific instructions about diet, clothing, transportation assistance, convalescence, follow-up with physician, etc., may be generated and recorded, including the timing relative to the scheduled event. In an outpatient scenario, similar instructions for post-diagnosis, and/or post-treatment needs may also be generated and recorded (e.g., exercise instructions for low back pain, wound or burn care).		

Section/Id#: Type: Name:	Conformance Criteria	Row#
	1. The system SHALL provide the ability to determine and render standardized instruction sets pertinent to the patient condition, for procedures, or scheduled events.	599
	2. The system SHALL provide the ability to render instructions pertinent to the patient as selected by the provider.	600
	3. The system SHOULD provide the ability to transmit instruction information in electronic format to be provided to the patient.	601
	4. The system SHALL provide the ability to render as part of patient instructions details on further care such as follow up, return visits and appropriate timing of further care.	602
	5. The system SHALL provide the ability to capture an indication that instructions were given to the patient.	603
	6. The system SHALL provide the ability to capture the actual instructions given to the patient or a reference to the document(s) containing those instructions.	604
	7. The system SHOULD provide the ability to annotate patient-specific instructions.	605
	8. The system SHOULD provide the ability to capture and maintain, as discrete data, the reason for variation from rule-based clinical messages and patient information.	606
	9. The system SHOULD provide the ability to manage patient instructions in multiple languages.	607
	10. The system MAY provide the ability to manage a list of appropriate patient instructions based on age.	608
	11. The system MAY provide the ability to manage a list of appropriate patient instructions based on gender.	609
	12. The system MAY provide the ability to manage a list of appropriate patient instructions based on diagnosis.	610
	13. The system MAY provide the ability to manage a list of appropriate patient instructions based on reading level.	611
	14. The system MAY provide the ability to render educational materials using alternative modes to accommodate patient sensory capabilities (e.g., vision impairment, hearing impairment).	612
CP.9 Header Manage Care Coordination & Reporting		613
Statement: Provide the functionality required to coordinate care with other providers and report care provided. **Description:** During care provision it is necessary to coordinate care with other providers, internal or external to the organization, as well as to communicate the care provided.		
CP.9.1 Function Produce a Summary Record of Care		614
Statement: Render a summarized review of a patient's episodic, and/or comprehensive EHR, subject to jurisdictional laws and organizational policies related to privacy and confidentiality. **Description:** Create summary views and reports at the conclusion of an episode of care. Create service reports at the completion of an episode of care such as, but not limited to, discharge summaries, specialist or consultation reports and public health reports, using information captured in the EHR and without additional input from clinicians.		
	1. The system SHALL provide the ability to render summaries of the patient's comprehensive EHR that include at a minimum: problem list, medication list, allergy and adverse reaction list, and procedures.	615
CP.9.2 Function Capture Heath Service Report Information		616
Statement: Support the creation of health service reports to authorized health entities that a provider may be required to generate (e.g., the creation of an oncologist's report that must be submitted to a national cancer registry). **Description:** Providers are prompted to collect sufficient information in the course of care to avoid duplicate, retrospective or other additional data entry as part of supporting health management programs and reporting, for example public health, such as notifiable condition reports, immunization, cancer registry and discharge data.		
	1. The system MAY render a notification that prompts providers on the data needed for end of encounter reporting during the continuum of care to streamline end of care data collection.	617
	2. The system SHOULD provide the ability to render service reports at the completion of an episode of care (e.g., discharge summaries or public health reports) using data collected during the encounter.	618
	3. IF the patient is tagged as deceased, THEN the system MAY provide the ability to capture (i.e., trigger) and render the collection of death certificate data.	619
	4. The system SHOULD provide the ability to capture and render the acknowledgement that health service reports have been received.	620
	5. The system SHALL conform to function CP.9.1 (Produce a Summary Record of Care).	621

Section/Id#: Type: Name:	Conformance Criteria	Row#
	6. The system SHOULD render a notification that prompts providers on the information needed for regulatory safety reporting.	622

3. Care Provision Support Section

Section Overview

The Care Provision Support Section focusses on functions required to support the provision of care to a specific patient to enable hands-on delivery of healthcare. This section is organized generally in alignment with Care Provision Section. For example, CP.4 (Manage Orders) is supported directly by CPS.4 (Support Orders). This alignment is designed to assist in finding related support functions related to care provision functions but is not expected to be 100% matched as some Care Provision Functions do not require matching Support functions or vice-versa.All functions within the Care Provision Support Section have an identifier starting with “CPS”.

Section/Id#: Type: Name:	Conformance Criteria	Row#
CPS.1 Header Record Management		623

Statement: Manage the patient record including all patient demographics, identifiers and other information to support the provision of care.

Description: Management of the patient record includes creation through quick registration or through a captured referral request as well as managing the patient encounter information linked to the appropriate patient record. It is also critical to manage the patient's relationships through genealogy, insurance, living situation or other means. This section also includes support for the management of patient and family preferences including patient advance directives, consents and authorizations linked to the unique patient record. For those functions related to data capture, data should be captured using standardized code sets or nomenclature, depending on the nature of the data, or captured as unstructured data. Care-setting dependent data are entered by a variety of caregivers. Data may also be captured from devices or other tele-health applications.

CPS.1.1 Function Manage a Patient Record		624

Statement: Manage a single logical record for each patient.

Description: A single record is needed for legal purposes, as well as to organize it unambiguously for the provider. Health information is captured and linked to the patient record. Static data elements as well as data elements that will change over time are maintained. The patient is uniquely identified, after which the record is tied to that patient. Combining information on the same patient, or separating information where it was inadvertently captured for the wrong patient, helps maintain health information for a single patient. In the process of creating a patient record, it is at times advantageous to replicate identical information across multiple records, so that such data does not have to be re-entered. For example, when a parent registers children as new patients, the address, guarantor, and insurance data may be propagated in the children’s records without having to re-enter them.

	1. The system SHALL manage a single logical record for each patient.	625
	2. The system SHALL provide the ability to determine the unique identity of a patient and link the record to a single patient.	626
	3. The system SHALL provide the ability to manage a record for a patient when the identity of the patient is unknown.	627
	4. The system SHOULD provide the ability to tag a record when the identity of the patient is unknown according to scope of practice, organizational policy, and/or jurisdictional law.	628
	5. The system SHALL provide the ability to manage more than one patient identifier for each patient record.	629
	6. The system SHALL link key patient identifier information (e.g., system ID, medical record number) to each patient record according to scope of practice, organizational policy, and/or jurisdictional law.	630
	7. The system SHOULD provide the ability to determine and render a patient by an alias and link the record to a single patient.	631
	8. The system SHALL provide the ability, through a controlled method, to integrate or link information for an individual patient upon recognizing the identity of the patient (e.g., if portions of a record were not yet integrated or linked because the patient's identity was not yet known, or a temporary identity (an alias) was being used, or there were duplicate records).	632
	9. The system SHALL provide the ability, when health information has been mistakenly associated with a patient, to tag the information as erroneous in the record of the patient in which it was mistakenly associated and render that information as erroneous in all renderings (i.e., outputs) containing that information.	633
	10. The system SHALL provide the ability, when health information has been mistakenly associated with a patient, to link the health information with the correct patient and tag as erroneous in the wrong patient record.	634
	11. The system SHALL render appropriate health information that has been tagged as erroneous in a patient's record (e.g., identify as erroneous when rendering or render in audit logs only).	635
	12. The system SHALL provide the ability to render parts of a single patient's record using a primary identifier (e.g., Unique patient identifier, encounter number), secondary identifiers (e.g., Social Security Number), or other information, or combination of information, which are not identifiers, but could be used to help identify the patient (e.g., name or Date of Birth).	636

Section/Id#: Type: Name:	Conformance Criteria	Row#
	13. The system SHALL provide the ability to tag as obsolete, inactivated or nullified, to store in archives and to remove a patient's record in accordance with local policies and procedures, as well as applicable laws and regulation.	637
	14. The system MAY provide the ability to auto-populate identical data to all records of related patients.	638
	15. The system SHOULD provide the ability to capture anonymized patient registration.	639
	16. The system SHOULD provide the ability to link the mother's and neonate's medical record numbers.	640
	17. The system SHALL provide the ability to render patient records based on previous names.	641
	18. The system SHOULD provide the ability to link several patients that have some common demographics.	642
CPS.1.2 Function Manage Patient Demographics		643

Statement: Manage patient demographic information.

Description: Demographic information (including names, addresses, phone numbers, email addresses, date of birth, gender, race, and ethnicity) must be managed to support unique patient identification, reporting, care provision requirements. Patient Demographic information may also include information about the patient's contacts, methods of contact (e.g., email or telephone), and modes of contact (e.g., call secretary during the day, send text message on the weekend). Patient demographic data are captured and maintained as discrete fields and may be enumerated, numeric, or codified according to scope of practice, organizational policy, and/or jurisdictional law. Key patient identifiers (i.e., name and primary patient record identifier) often appear on patient information output (e.g., rendering of a patient's record). Patients may have multiple, and/or compound names, sometimes employing accent marks or special characters. To help parse patient names, discete fields are often used.

	1. The system SHALL provide the ability to capture demographic information as discrete data as part of the patient record.	644
	2. The system SHALL provide the ability to maintain demographic information as discrete data as part of the patient record.	645
	3. The system SHALL provide the ability to render demographic information as discrete data as part of the patient record.	646
	4. The system SHALL provide the ability to manage historic information for demographic data including prior names, addresses, phone numbers and email addresses.	647
	5. The system SHALL render a set of patient identifying information at each interaction with the patient record, according to scope of practice, organizational policy, and/or jurisdictional law (e.g., a certain realm may require that the patient's picture appear on every screen that is used during a provider's face-to-face interactions with the patient).	648
	6. The system MAY store the demographic information (and other meaningful individual identifiers) separately from clinical data for identity protection purposes.	649
	7. The system SHALL provide the ability to capture valid date/time values in discrete fields (e.g., 2011/12/31 2330), including valid incomplete or partial date/time values (e.g., 2011/12).	650
	8. The system SHOULD provide the ability to enter a partial date/time if the exact date/time of birth or death is unknown (e.g., year/month only).	651
	9. The system SHALL provide the ability to capture the patient's gender used for administrative purposes (as distinct from the clinical gender).	652
	10. The system SHOULD provide the ability to manage multiple active addresses for the patient.	653
	11. The system SHOULD provide the ability to manage multiple active phone numbers for the patient.	654
	12. The system SHOULD provide the ability to manage the names and contact information of the patient's personal representatives (e.g., guardian, surrogate or financial guarantor) and personal relationships (e.g., foster parents or biological parents).	655
	13. The system SHALL provide the ability to manage the date/time of birth, down to the minute, according to scope of practice, organizational policy, and/or jurisdictional law.	656
	14. The system SHOULD provide the ability to capture patient demographics through integration with hospital systems to facilitate patient registration.	657
	15. The system SHOULD provide the ability for the patient to annotate demographic data.	658
	16. The system SHOULD determine and render a patient's age and age units for any given date.	659
	17. The system MAY analyze and render potential merge matches for registrations according to organizational policy.	660
	18. The system SHALL provide the ability to manage multiple patient names in each name component field (e.g., first, middle, last, suffix, or title).	661
	19. The system SHALL provide the ability to manage patient names that include any accent marks or special characters.	662
	20. The system MAY provide the ability to link family or group members so that information that is common to all the members can be updated.	663
CPS.1.3 Function Capture Quick Registration		664

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	Statement: Capture a registration, either directly entered or received from an external system, without complete supporting demographics, in order to facilitate patient care before the full registration is complete. **Description:** The registration process, including the verification of full demographics data, insurance, contact information, etc. is frequently time consuming. To facilitate patient care in emergency situations, the system must be able to register a patient with minimal information in a time critical manner. Examples of situations when this might be necessary include when a patient presents with acute myocardial infarction, a disaster response, or a mass casualty event.After care is given during an emergent situation, records are often incomplete or invalid. Such records may need to be completed and validated. Afterwards, those records may need to be harmonized. For example, the records of "John Doe1; approximate age is 30" may need to be matched with existing records for "Henry Smith; age 28".	
	1. The system SHALL provide the ability to capture patient registration information to accommodate an expedited registration situation (e.g., during a disaster or during a census overload at a facility).	665
	2. The system SHOULD provide the ability to capture registration through integration with an external system (e.g., Hospital ADT) before all identifying data is known.	666
	3. The system SHALL provide the ability to harmonize information generated during an expedited registration process with the EHR.	667
CPS.1.4 Function Capture Referral Request		668
	Statement: Enable the receipt and processing of referrals from care providers or healthcare organizations, including clinical and administrative details of the referral, and consents and authorizations for disclosures as required. **Description:** Incoming referrals may be from physicians' offices, specialists, clinics, Emergency Medical Services (EMS), transfers from other hospitals or emergency departments, nursing homes, etc. Referrals may be received electronically (i.e. e-Referrals); or may be received non-electronically. If non-electronic, the system needs to allow the user to capture the referral information and manage referral request. If the system supports e-Referrals, then the system will also need to support additional functionality to manage the receipt of the referral request. When a system receives a referral request the request must be validated against established criteria to determine if it meets the recipient's requirements and is appropriate. Referrals may be received for patients who do not previously exist in the recipient system and the system must allow for the ability to triage the request and respond to the requestor. If appropriate the system should allow for the creation of a patient record including the capture of clinical and administrative information received with the referral request. The management of information on patients who are inbound to the care setting is an important component of information management. Data must be easily accessible, centrally retrievable, updatable, transportable and reusable. Clinical data from provider to provider is essential to quality-coordinated care for patients referred to the care setting. Knowledge of patients who are expected to arrive helps both care setting and administrative staff plan resource use in real time.	
	1. The system SHALL provide the ability to capture referral(s) in some form (e.g., paper, fax, electronic) from other care provider(s), whether internal or external to the organization.	669
	2. The system SHALL capture and render the Source of Referral and the Reason for Referral.	670
	3. The system SHOULD provide the ability to import or receive a referral(s) from other care provider(s), whether internal or external to the organization.	671
	4. The system SHALL conform to function CPS.2.1 (Support externally-sourced Clinical Documents) to support the capture of referral documents.	672
	5. The system SHALL conform to function CPS.2.2 (Support externally-sourced Clinical Data) to support the capture of referral data.	673
	6. The system SHOULD conform to function CPS.2.3 (Support Emergency Medical System Originated Data) to support the capture of referral data.	674
	7. The system SHALL conform to function CPS.2.4 (Support externally-sourced Clinical Images) to support the capture of referral images.	675
	8. The system SHALL provide the ability to analyze and present recommendations for potential matches between the patient identified in a received referral and existing patients in the system.	676
	9. IF the system provides the ability to electronically capture referrals, THEN the system SHALL provide the ability to receive an e-referral for a patient that did not previously exist in the system.	677
	10. IF the system provides the ability to electronically capture referrals, THEN the system SHALL provide the ability to define a minimum set of required information that must be included in an e-referral to be accepted, according to scope of practice, and/or organizational policy.	678
	11. The system SHOULD provide the ability to capture administrative details from a referral that was received (e.g., insurance information, or a consent and authorization for disclosure).	679
	12. The system SHOULD provide the ability to capture clinical details from a referral that was received.	680
	13. IF the system provides the ability to electronically capture referrals, THEN the system SHALL provide the ability to present received e-referrals to a user for triage and approval.	681
	14. The system MAY conform to function AS.9.2 (Support Financial Eligibility Verification) and display the results of electronic referral eligibility and health plan/payer checking.	682
	15. IF the system provides the ability to electronically capture referrals, THEN the system MAY provide the ability to define diagnosis-based requirements for accepting an e-referral to enable system triage of referrals (e.g., a breast cancer specialist would not want to receive a colon cancer patient referral).	683
	16. IF the system provides the ability to electronically capture referrals, THEN the system MAY provide the ability to define clinical requirements (such as test results) for accepting an e-referral to enable system triage of referrals (e.g., a breast cancer specialist may require a positive mammogram before accepting the referral).	684

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	17. IF the system provides the ability to electronically capture referrals, THEN the system SHALL provide the ability for a user to create a patient record from information received in the referral.	685
	18. IF the system provides the ability to electronically capture referrals, THEN the system SHALL provide the ability for a user to reject a e-referral request	686
	19. IF the system provides the ability to electronically capture referrals, THEN the system SHALL provide the ability to capture the reason for an e-referral acceptance or rejection.	687
	20. IF the system provides the ability to electronically capture referrals, THEN the system SHALL provide the ability to transmit to the referring provider the acceptance or rejection of the e-referral request including the reasons provided for acceptance/rejection.	688
	21. IF the system provides the ability to electronically capture referrals, THEN the system SHOULD provide the ability to transmit to the referring provider a request additional information prior to accept/ rejection of e-referral request.	689
	22. IF the referral includes a transfer of care (complete or partial or temporary), THEN the system SHALL provide the ability to capture the documentation of the transfer of care according to scope of practice, organizational policy, and/or jurisdictional law.	690
	23. The system SHOULD provide the ability to electronically receive and render location data for patients who are en-route to the care setting (e.g., EMS system tracking patient arrival to the Emergency Department).	691
	24. The system SHOULD conform to function AS.6.2 (Manage Healthcare Resource Availability Information) to support the allocation of resources for incoming referred patients.	692
	25. The system MAY provide the ability to transmit to the referring provider a notification that the patient has attended an appointment with the referred to provider.	693
CPS.1.5 Function Manage Patient Encounter		694

Statement: Manage patient encounter information, including tele-health encounters, and support follow-up encounters.

Description: Each encounter of the patient with the healthcare setting needs to be recorded and the information relevant to the distinct encounter managed. This information includes date and time of the encounter, providers involved, location(s), and the reason for the encounter etc. Additionally, follow-up encounters may require prior administrative and clinical information to be determined or captured, maintained and rendered.Tele-health encounters have unique requirements that may also be supported by the system.

	1. The system SHALL provide the ability to manage information regarding a patient encounter, including a minimum of the following data: the date/time, providers, location, and reason for the encounter.	695
	2. The system SHOULD provide the ability to determine and render a notification that the patient requires a follow-up encounter.	696
	3. The system SHOULD provide the ability to determine or capture administrative information that is required for a follow-up encounter (e.g., co-payments, service location, prior authorization for a chest x-ray).	697
	4. The system SHOULD provide the ability to maintain and render administrative information relevant to an encounter.	698
	5. The system SHOULD provide the ability to determine or capture clinical information that is required for a follow-up encounter (e.g., fasting requirements, pre-medications).	699
	6. The system MAY provide the ability to manage a patient tele-health encounter including a minimum of the following data: date/time, providers, location and reason for the encounter.	700
	7. The system SHALL provide the ability to capture one or more complaints, presenting problems, or other reasons for the visit or encounter (e.g., chest pain, gunshot wound, and drug overdose during a single encounter).	701
	8. The system SHALL provide the ability to capture the primary reason (e.g., the Chief Complaint or the most important reason) for visit/encounter from the patient's perspective.	702
	9. The system MAY provide the ability to render an indication that the patient was referred for the visit or encounter.	703
CPS.1.6 Header Subject to Subject Relationship		704

Statement: Information about the relationships between patients and others facilitate healthcare delivery and appropriate access to health information.

Description: Information regarding relationships between patients and others serve to provide caregivers with an understanding of the patient's environment and support systems. Examples of relationships between patients and others include parent, relative, legal guardian, health care surrogate or payer.

CPS.1.6.1 Function Related by Genealogy		705

Statement: Provide information on relationships by genealogy.

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	Description: Relationships by genealogy may include genetic mother, next of kin, or family members. Appropriate consents must be acquired prior to the collection or use of this information.	
	1. The system SHALL provide the ability to capture, maintain and render genealogical relationship information.	706
	2. The system SHALL provide the ability to extract the identity of persons related by genealogy to the patient.	707
	3. The system SHOULD provide the ability to capture, maintain and render patient consents to enable patient records to be viewed for the purposes of a genealogical family member's family medical history.	708
	4. The system SHOULD provide the ability to transmit family history entries to the Personal Health Records (PHRs) of family members according to scope of practice, organizational policy, and/or jurisdictional law.	709
CPS.1.6.2 Function Related by Insurance		710
	Statement: Support interactions with other systems, applications, and modules to provide information on an insured person's relationships. Examples of relationships include domestic partner, spouse, and guarantor of payment. **Description:** Identifying relationship of persons insured under the same insurance plan is important for administrative transactions.	
	1. The system MAY provide the ability to render information regarding patients who are related by insurance plan.	711
CPS.1.6.3 Function Related by Living Situation		712
	Statement: Provide information on relationships by living situation. Examples of living situations include college dormitory, military deployment, in same household. **Description:** Living situations may be important means for providers to uniquely identify patients or to identify illnesses that may occur within a given proximity. Patient relationships that may be affected by past situations may include the environment of the patient when the patient was a fetus, for example, a mother who worked in a chemical factory last week or while pregnant with the patient thirty years prior, or mother carried child during time of extreme famine.	
	1. The system MAY provide the ability to render living situation related information.	713
CPS.1.6.4 Function Related by Other Means		714
	Statement: Provide information on patient relationships that are represented other than by genealogy, insurance or living situation. **Description:** Patients relationships are not limited to genealogy, insurance or living situations. Other examples of patient relationships that are relevant to the healthcare or administrative process may include surrogate mother, guardian, a person authorized to see health records, health care surrogate, and persons who may be related by epidemiologic exposure.	
	1. The system MAY provide the ability to render information regarding patients related by employer and work location for purposes of epidemiological exposure and public health analysis and reporting.	715
	2. The system SHOULD provide the ability to render information regarding persons with "Power of Attorney for Health Care" or other persons with the authority to make medical decisions on behalf of the patient.	716
	3. The system MAY provide the ability to render information regarding persons related to the patient other than by genealogy, insurance, and/or living situation according to scope of practice, organizational policy, and/or jurisdictional law.	717
CPS.1.7 Function Preferences, Directives, Consents and Authorizations		718
	Statement: Capture and manage patient preferences, advance directives, consents and authorizations. **Description:** In the Preferences, Directives, Consents and Authorizations functions there are times when actions/activities related to “patients” are also applicable to the patient representative. Therefore, in this section, the term “patient” could refer to the patient, and/or the patient’s personal representative (i.e. guardian, surrogate, proxy, health care agent).	
	1. The system SHOULD conform to function CPS.1.7.1 (Support for Patient and Family Preferences).	719
CPS.1.7.1 Function Support for Patient and Family Preferences		720
	Statement: Support the integration of patient and family preferences into clinical decision support. **Description:** Decision support functions should permit consideration of patient/family preferences and concerns, such as with language, religion, culture, medication choice, invasive testing, and advance directives. Such preferences should be captured in a manner that allows for their integration with the health record and easy retrieval from the health record. Preferences may be specified across all	

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treatment plans or specifically to individual or set of treatment plans. Preferences may also be used to adjust patient information including labeling and medication instructions (e.g., for language and print size).		
	1. The system SHALL provide the ability to capture, maintain and render patient and family preferences as they pertain to current treatment plans.	721
	2. The system SHOULD provide the ability to update care guidelines and options relating to documented patient and family preferences, including standards of practice (e.g., treatment options for individuals who refuse blood transfusions).	722
	3. The system SHOULD provide the ability to analyze care guidelines and options relating to documented patient and family preferences, including standards of practice.	723
	4. The system SHOULD provide the ability to render prompts for testing and treatment options based on patient and family preferences.	724
	5. The system SHOULD provide the ability to render a comparison between standard practice and testing or treatment options based on patient and family preferences.	725
	6. The system MAY provide the ability to receive external materials (e.g., teaching materials and product labels) based on patient and family preferences.	726
	7. The system SHOULD provide the ability to integrate necessary documentation of patient and family preferences (e.g., living wills, advance directives, healthcare proxies, and specific consents or releases).	727
CPS.1.7.2 Function Manage Patient Advance Directives		728
Statement: Capture and maintain patient advance directives. **Description:** Patient advance directives and provider Do Not Resuscitate (DNR) orders are captured, as well as the date and circumstances under which the directives were received, and the location of any paper or electronic advance directive documentation.Advanced Directives may include for example living will, durable power of attorney, preferred interventions for known conditions, or the existence of a "Do Not Resuscitate" order.Circumstances is used to indicate where, how and when an advanced directive was captured (e.g., provided by the patient's parent during initial consultation visit).		
	1. The system SHALL provide the ability to manage advance directive information including the type of directive, relevant dates (e.g., received, reviewed, rescinded, updated), circumstances under which the directives were received (e.g., during initial consultation), and the location of any paper or electronic advance directive documentation.	729
	2. The system SHALL render an indication that advance directive(s) have been captured.	730
	3. The system SHALL provide the ability to render the type of advance directives captured for the patient (e.g., living will, durable power of attorney, preferred interventions for known conditions, or the existence of a "Do Not Resuscitate" order).	731
	4. The system SHALL provide the ability to manage "Do Not Resuscitate" orders.	732
	5. The system SHOULD conform to function CPS.2.4 (Support externally-sourced Clinical Images) in order to capture scanned patient advance directive documents, and/or "Do Not Resuscitate" orders.	733
	6. The system SHALL provide the ability to manage the date and circumstances of the most recent review of the advanced directives.	734
	7. The system SHOULD provide the ability to manage the identity and role of the principal acting on behalf of the provider to capture and complete the advance directive for the patient.	735
	8. The system SHALL provide the ability to manage the date and time an advance directives paper document was signed/completed.	736
CPS.1.7.3 Function Manage Consents and Authorizations		737
Statement: Create, maintain, and verify patient decisions (such as informed consent for treatment or disclosure). **Description:** Decisions are documented and include the extent of information, verification levels and exposition of treatment options. This documentation helps ensure that decisions made at the discretion of the patient, family, or other responsible party, govern the actual care that is delivered or withheld. There may be several documents active at any one time that may govern a patient's care. Both clinical and administrative consents and authorizations are considered part of this function. A consent or authorization includes patient authorization for re-disclosure of sensitive information to third parties. Consents/Authorizations for printing should include appropriate standardized forms for patients, guardians, or foster parents. The system must appropriately present forms for adolescents according to privacy rules.Some jurisdictions may mandate assent. Assent is agreement by the patient to participate in services when they are legally unable to consent (e.g., an adolescent, an adult with early dementia).		
	1. The system SHALL provide the ability to capture and render an indication that a patient has completed a consent and authorization (e.g., the patient completes an eye surgery -related consent before receiving eye surgery).	738
	2. The system SHALL provide the ability to capture and render an indication that a patient has withdrawn applicable consents and authorizations.	739

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	3. The system SHOULD conform to function CPS.2.1 (Support externally-sourced Clinical Documents).	740
	4. The system SHOULD conform to function CPS.2.2 (Support externally-sourced Clinical Data).	741
	5. The system SHOULD provide the ability to capture scanned consent and authorization paper documents.	742
	6. The system MAY provide the ability to present consent and authorization forms on-line.	743
	7. The system MAY provide the ability to enter consent and authorization forms on-line, with appropriate electronic signature, according to scope of practice, organizational policy, and/or jurisdictional law.	744
	8. The system MAY provide the ability to render printable consent and authorization forms/form templates.	745
	9. The system MAY render the consents and authorizations as part of the patient's record during a specific clinical activity, (e.g., a treatment or a surgery).	746
	10. The system MAY provide the ability to render consents and authorizations chronologically, reverse chronologically, and by type of consent or authorization.	747
	11. The system SHOULD provide the ability to capture an assent for patients who are legally unable to consent.	748
	12. The system SHALL provide the ability to capture the source of each consent, such as the patient or the patient's personal representative if the patient is legally unable to provide it.	749
	13. The system SHOULD provide the ability to manage information regarding the patient's personal representative, advocate, healthcare proxy, legal representative, financially responsible entity or other similar person or entity, including their level of authority to make medical or financial decisions on behalf of the patient.	750
CPS.2 Function Support externally-sourced Information		751

Statement: Capture and maintain a variety of information from multiple external sources.

Description: External sources are those outside the EHR system, including clinical, administrative, and financial information systems, other EHR systems, Personal Health Record (PHR) systems, and data received through health information exchange networks.

	1. The system SHOULD provide the ability to capture and store a reference to externally-sourced information.	752
	2. The system SHOULD provide the ability to capture and store a reference to externally-sourced Emergency Medical Services (EMS) information.	753
	3. The system SHALL provide the ability to render tagged patient health information derived from administrative or financial data and the source of that data for use by authorized users.	754
CPS.2.1 Function Support externally-sourced Clinical Documents		755

Statement: Incorporate clinical documentation (computable and scanned) from external (to the system) sources.

Description: Mechanisms for incorporating external clinical documentation (including identification of source) are available. External is considered anything that is external to the system - i.e. documents from the organization; but created in another system would be considered 'external' for the purposes of this function. Documentation incorporated through these mechanisms is presented alongside locally captured documentation and notes wherever appropriate. This covers all types of documents received by the provider that would typically be incorporated into a medical record, including but not limited to faxes, referral authorizations, consultant reports, and patient/resident correspondence of a clinical nature. Intrinsic to the concept of electronic health records is the ability to exchange health information with other providers of health care services. Health information from these external sources needs to be received, stored in the patient record, and displayed upon request.

External data and documents addressed in the function include:

1. Laboratory results received through an electronic interface - This information is to be received and stored in the resident record as discrete data, which means that each separate element of the data needs to be stored in its own field. Therefore, if laboratory results are received through an electronic interface, the results are received in the EHR and the laboratory test name, result (value), and unit of measure are correctly displayed as discrete data (vs. report format).

2. Scanned documents received and stored as images (e.g., power of attorney forms, Living wills) - These scanned documents are indexed and can be retrieved based on the document type, date of the original document, and the date of scanning.

3. Text-based outside reports (e.g., x-ray reports, hospital discharge summaries, history & physicals) - Any mechanism for capturing these reports is addendable: OCR, PDF, image file of report, etc.

4. Clinical images from an external source (e.g., radiographic images, digital images from a diagnostic scan or graphical images) – These images may be stored within the system or be provided through direct linkage to an external source such as a hospital PACS system.

5. Other forms of clinical results, such as wave files of EKG tracings.

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	6. Medication detail (e.g., a medication history) from an external source such as a pharmacy, the patient, payer, or another provider - While the medication detail includes the medication name, strength, and SIG, this does not imply that the data will populate the medication module. 7. Structured, text-based reports (e.g., medical summary text in a structured format). 8. Standards-based structured, codified data (e.g., a Continuity of Care Document (CCD) with SNOMED CT). Data incorporated through these mechanisms is presented alongside locally captured documentation and notes wherever appropriate.	
	1. The system SHALL provide the ability to capture, store and render external documents.	756
	2. The system SHALL provide the ability to capture, store and render scanned documents.	757
	3. The system SHOULD provide the ability to capture, store and render computable documents (e.g., CDA, ISO 13606, laboratory results or medication lists).	758
	4. The system SHOULD provide the ability to store imaged documents or link to the imaged documents in imaging systems.	759
	5. The system SHALL provide the ability to receive from an external source unstructured, text-based documents and reports.	760
	6. The system SHOULD provide the ability to receive from an external source structured, text-based documents and reports.	761
	7. The system SHALL provide the ability to uniquely tag and render scanned documents based on the document type, the date of the original document and the date of scanning according to scope of practice, organizational policy, and/or jurisdictional law.	762
	8. The system SHALL provide the ability to link documentation and annotations with structured content (e.g., link information gathered during an office visit, phone communication, or e-mail consult with structured content that is stored as a laboratory result, problem, or diagnosis).	763
	9. The system SHOULD conform to TI.1.5 (Non-Repudiation) and TI.1.6 (Secure Data Exchange) when importing/receiving both structured and unstructured data.	764
	10. The system MAY provide the ability to render a notification or alert based on information received from an external source according to scope of practice, organizational policy, and/or jurisdictional law.	765
	11. IF a system receives information from external sources, THEN the system SHALL be able to identify the source of that information.	766
CPS.2.2 Function Support externally-sourced Clinical Data		767
	Statement: Incorporate discrete clinical data from external sources and support communication/presentation of data captured from medical and non-medical devices and entities. **Description:** Mechanisms for incorporating external clinical data (including identification of source) are available and communication with non-medical devices and entities is supported as appropriate to the care setting such as an office or a patient's home. Externally-sourced data may be presented with locally-sourced documentation and notes wherever appropriate. This covers all types of data received by the provider that would typically be incorporated into a medical record, including but not limited to faxes, referral authorizations, consultant reports, and patient/resident correspondence of a clinical nature. Intrinsic to the concept of electronic health records is the ability to exchange health information with other providers of health care services. Health information from these external sources needs to be received, stored in the patient record, and displayed upon request. Examples of externally-sourced data and documents include: 1. Laboratory results received through an electronic interface. This information is received and stored in the resident record as discrete data, which means that each separate element of the data needs to be stored in its own field. Therefore, if laboratory results are received through an electronic interface, the results are received in the EHR and the laboratory test name, result (value), and unit of measure are correctly displayed as discrete data (instead of in report or summarized format). 2. Scanned documents received and stored as images (e.g., power of attorney forms or living wills). These scanned documents are indexed and can be retrieved, e.g., based on the document type, date of the original document, and the date of scanning. 3. Text-based outside reports (e.g., x-ray reports, hospital discharge summaries or history and physical examinations). Any mechanism for capturing these reports is acceptable (e.g., OCR, PDF, JPG or TIFF). 4. Clinical images from an external source (e.g., radiographic images, digital images from a diagnostic scan or graphical images). These images may be stored within the system or be available by direct linkage to an external source (e.g., a hospital's picture archiving and communication system). 5. Other forms of clinical results (e.g., EKG waveforms). 6. Medication history from an external source such as a retail pharmacy, the patient, or another provider . While the medication history includes the medication name, strength, and SIG, this does not imply that the data will populate the medication administration module. In many systems the medication administration module is populated from the medication order rather than from the medication history.	

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7. Structured, text-based reports (e.g., medical summary text in a structured format). 8. Standards-based structured, codified data (such as a standards-based referral letter that contains SNOMED CT codes). Such data may be presented with locally-sourced documentation and notes wherever appropriate.		
	1. The system SHALL provide the ability to capture and store computable data (e.g., laboratory results, telemetry, or medication details).	768
	2. The system SHALL provide the ability to capture and store a reference to external data.	769
	3. The system SHALL provide the ability to capture and store externally-sourced computable data (e.g., laboratory results, telemetry, medication details).	770
	4. The system SHALL provide the ability to capture and store externally-sourced standards-based structured, codified data.	771
	5. The system SHOULD provide the ability to capture and store laboratory test data as discrete data elements (e.g., test name, laboratory sample status, date/time of collection, test results, original test units, laboratory panel name, pre-defined testing conditions met indicator, specimen identifier, reference range lower limit, reference range upper limit, laboratory identifier, abnormal flag, and clinical significance indicator).	772
	6. The system SHOULD provide the ability to capture and store externally-sourced clinical documentation as structured data, where appropriate, including the original, updates and addenda.	773
	7. The system SHOULD provide the ability to capture and store health-related data from non-medical devices (e.g., digital camera or sound recorder).	774
	8. The system SHOULD provide the ability to capture the original requisition ID number associated with an order.	775
CPS.2.3 Function Support Emergency Medical System Originated Data		776
Statement: Provide the ability to capture and maintain patient information from an external Emergency Medical System (EMS). **Description:** Emergency Medical Systems can provide care at the patient's location, prior to transport, or while enroute to medical facilities via ambulance, aeromedical evacuation and other transport mechanisms. Key parts of information about the patient can be gathered here, some of which is computable data (e.g., EKG and other telemetry), non-computable text-based and multimedia digital objects (e.g., images, audio reports and conversations).		
	1. The system SHOULD provide the ability to capture and store information transmitted from the Emergency Medical Services (EMS) (e.g., wound site, nature of the wound, vital signs).	777
	2. The system MAY provide the ability to capture and store an audio file from an Emergency Medical Service.	778
CPS.2.4 Function Support externally-sourced Clinical Images		779
Statement: Incorporate clinical images from external sources and support communication/presentation of images from medical and non-medical devices and entities. **Description:** Mechanisms for incorporating external clinical images (including identification of source) are available and communication with non-medical devices and entities is supported as appropriate to the care setting such as an office or a patient's home. Externally-sourced images may be presented with locally-sourced documentation and notes wherever appropriate. This covers all types of images received by the provider that would typically be incorporated into a medical record. These image documents are indexed and can be retrieved, e.g., based on the document type, date of the original document, and the date of scanning. Images may also be stored within the system or accessed by reference to an external system (e.g., a hospital's picture archiving and communication system). Examples of image formats include OCR, PDF, JPG or TIFF. Examples of externally-sourced images include: laboratory results report images 2. Radiographic images3. Images of power of attorney forms, living wills or birth certificates4. Graphs and charts5. Photographs or drawings of patient wounds6. Wave files of EKG tracings		
	1. The system SHOULD provide the ability to capture, store and render clinical images (e.g., radiographs, pictures, video/audio, waveforms) received from external sources.	780
	2. The system SHOULD provide the ability to receive from an external source clinical result images (e.g., radiologic images).	781
	3. The system SHOULD provide the ability to receive from an external source other forms of clinical results (e.g., wave files of EKG tracings or psychological assessment results).	782
CPS.2.5 Function Support patient-originated Data		783
Statement: Capture and explicitly label patient-originated data, link the data source with the data, and support provider authentication for inclusion in patient health record. **Description:** It is critically important to be able to distinguish clinically authored and authenticated data from patient-originated data that is either provided by the patient for inclusion in the EHR or entered directly into the EHR by the patient from clinically authenticated data. Patients may provide data for entry into the health record or be given a mechanism for entering this data directly. Patient-originated		

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	data intended for use by providers will be available for their use.Data about the patient may be appropriately provided by: the patient;2. a surrogate (e.g., parent, spouse, guardian); 3. an informant (e.g., teacher, lawyer, case worker); or4. devices (e.g., blood pressure/ sugar monitors).An electronic health record may provide the ability for direct data entry by any of these. Patient-originated data may also be captured by devices and transmitted for inclusion into the electronic health record.Data entered by any of these must be stored with source information. A provider must authenticate patient-originated data included in the patient's legal health record. A provider must be able to indicate they have verified the accuracy of patient-originated data (when appropriate and when a verification source is available) for inclusion in the patient record.Such verification does not have to occur at each individual data field and can be at a higher level of the data.	
	1. The system SHALL capture the source of clinical data provided on behalf of the patient and tag the data accordingly.	784
	2. The system SHALL provide the ability for an authorized user (e.g., clinician) to tag as accurate and verified patient-originated data (when appropriate and when a verification source is available) for inclusion in the patient record (e.g., patient-orginated allergy report is verified by clinician so that it may appear in the allergy list).	785
	3. The system SHALL capture patient-sourced data distinctly from provider-sourced data (i.e. ensure that provider sourced data is not modified by patient-sourced data).	786
	4. The system SHALL capture both structured and unstructured data as defined in RI.1.2.1 (Manage Record Entries).	787
	5. The system SHOULD provide the ability to send notifications to consumer health solutions, such as Personal Health Records (PHRs) or home monitoring devices.	788
	6. The system SHOULD provide the ability to receive notifications from consumer health solutions, such as PHRs or home monitoring devices.	789
CPS.2.6 Function Support Patient Health Data Derived from Administrative and Financial Data and Documentation		790
	Statement: Capture and explicitly label patient health data derived from administrative or financial data; and link the data source with that data. **Description:** It is critically important to be able to distinguish patient health data derived from administrative or financial data from clinically authenticated data.	
	1. The system SHALL provide the ability to capture, store and render patient health data derived from administrative or financial data and tag it as such.	791
	2. The system SHOULD provide the ability to capture, store, and render, the source of patient health data derived from administrative and financial data.	792
	3. The system SHOULD provide the ability to annotate patient health information derived from administrative or financial data (e.g., by providing text-based comments, attaching a picture of an injury, or attaching an image of a supporting document).	793
CPS.2.7 Function Support Patient Data Derived from Eligibility, Formulary and Benefit Documentation for Electronic Prescribing		794
	Statement: Capture and explicitly label patient data derived from eligibility, formulary and benefit information; and link the data source with that data. **Description:** Sources of eligibility, formulary and benefit may provide data for entry into the electronic prescribing or be given a mechanism for entering this data directly. The data must be explicitly labeled as derived from eligibility, formulary and benefit information. Patient data that is derived from eligibility, formulary and benefit data may be provided by: 1. a provider 2. a payer, or 3. entities that transmit or process eligibility, formulary and benefit data	
	1. The system SHALL provide the ability to manage patient data derived from eligibility, formulary and benefit information.	795
	2. The system SHOULD provide the ability to capture the source of patient data derived from eligibility, formulary and benefit information.	796
CPS.2.8 Function Support Medical Device Originated Data		797
	Statement: Support collection and presentation of data captured from medical and medication monitoring devices. **Description:** Collection of medical device information is supported as appropriate to the care setting. Examples include: vital signs/pulse-oximeter, anesthesia machines, home diagnostic devices for chronic disease management, laboratory machines, bar coded artifacts	

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(e.g., medicine, immunizations, demographics, history, and identification), transcranial magnetic stimulation systems, or medication reminder systems.		
	1. The system SHALL provide the ability to capture electronic data from medical devices according to scope of practice, organizational policy, and/or jurisdictional law.	798
	2. The system SHALL provide the ability to render information collected from medical devices as part of the medical record.	799
	3. The system SHOULD capture and maintain the following information of a device when it is suspected as the cause of a Serious Adverse Event: brand name, common device name, manufacturer, model number, catalog number, serial number, lot number, expiration date, other number(s), operator of device, if implanted (date), if explanted (date), single or multiple use device indicator (i.e. if this is a single use device that was reprocessed and reused on a patient).	800
	4. The system SHOULD provide the ability to present data captured from medical devices for verification by a provider according to scope of practice, organizational policy, and/or jurisdictional law, and present the identification of the relevant device.	801
	5. The system SHOULD link to originating medical device as identified by original device ID and device type for captured data.	802
	6. The system SHOULD provide the ability to capture the date/time from medical devices.	803
	7. The system SHOULD provide the ability for the user to manually capture data from medical devices.	804
CPS.3 Header Support Clinical Documentation		805
Statement: Standard assessments, guidelines and prompts are provided to facilitate decision support for the optimization of patient care based on specific medical conditions. **Description:** Provider support is offered for the consideration of issues that would help assure optimal patient management. These may include standard assessments, care plans and treatment protocols, with triggers and prompts to assist during the patient encounter. Recommendation for patient testing and follow-up is also included along with decision support for patient self-management of a condition between patient-provider encounters.		
CPS.3.1 Function Support for Standard Assessments		806
Statement: Support the establishment, updates and use of assessment forms that will assist in the development of and adherence to care plans, guidelines, and protocols at the point of information capture. **Description:** As part of managing assessment definitions, the system will support the ability to create a set of assessment forms and, optionally, associated logic (e.g., workflow, business and clinical rules). This assessment definition process may include the ability to define, revise and manage the tools, files and processing for the conduct of a patient assessment. Furthermore, the assessment definition may also include template development, prompts for additional information, related notification alerts and workflow processes. When a clinician fills out an assessment, data entered triggers the system to prompt the assessor to consider issues that would help assure a complete/accurate assessment. A simple demographic value or presenting problem (or combination) could provide a template for data gathering that represents best practice in this situation, e.g., Type 2 (Adult Onset) Diabetes diabetic review, fall and 70+, and rectal bleeding. Support for standard assessment may include the ability to record and store the value for the answers to specific questions in standardized assessment tools or questionnaires. When a specific recognized-standard assessment does not exist, the system will support the creation of unique new, locally-defined assessment. The system may enable, and/or encourage the use of the format and data elements of similar assessments in the systems whenever possible. (NOTE: A new assessment may not necessarily be unique, since a facility may copy an assessment from another facility.)		
	1. The system SHALL provide the ability to capture, maintain, and render recognized-standard assessment information in the patient record.	807
	2. The system MAY provide the ability to capture supplemental assessment data from evidence-based standard assessments, practice standards, or other generally accepted, verifiable, and regularly updated standard clinical sources.	808
	3. The system SHOULD render prompts based on practice standards to recommend additional assessment functions.	809
	4. The system SHOULD provide the ability to capture the configuration of prompts based on practice standards to recommend additional assessment functions (e.g., by defining the text of each prompt).	810
	5. The system SHOULD conform to function CP.1.4 (Manage Problem List) and provide the ability to maintain the problem list by activating new problems and deactivating old problems as identified when captured using recognized-standard, and/or locally-defined assessments.	811
	6. The system SHOULD provide the ability to maintain recognized-standard, and/or locally-defined assessment information for problems identified on the patient's problem list.	812
	7. The system MAY audit modifications to the title, version, and data field labels (i.e., questions) of the recognized-standard, and/or locally-defined assessment used in a patient encounter.	813
	8. The system MAY provide the ability to link the value of the assessment responses to the related data field label (i.e., link the answer to the exact wording of the question).	814

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	9. The system SHOULD provide the ability to manage assessment templates for provider use in assessing patient condition according to scope of practice, organizational policy, and/or jurisdictional law.	193
	10. The system SHOULD provide the ability to manage recognized-standard, and/or locally-defined assessment templates according to scope of practice, organizational policy, and/or jurisdictional law.	194
CPS.3.2 Function Support for Patient Context-Driven Assessments		815
Statement: Offer prompts based on patient-specific data at the point of information capture for assessment purposes. **Description:** When a clinician fills out an assessment, data entered is matched against data already in the system to identify potential linkages and optimize patient care. For example, the system could scan the medication list and the knowledge base to see if any of the symptoms are side effects of medication already prescribed. Important diagnoses could be brought to the doctor's attention, for instance ectopic pregnancy in a woman of child bearing age, or appendicitis in a geriatric patient who has abdominal pain.		
	1. The system SHOULD provide the ability to analyze assessment data entered during the encounter against health evidence based standards and best practices.	816
	2. The system MAY analyze health data and patient context-driven assessments in terms of practice standards, and render notifications (e.g., of possible additional testing, possible diagnoses, or adjunctive treatment).	817
	3. The system SHOULD provide the ability to analyze assessment data against data in the patient-specific problem list.	818
	4. The system SHOULD provide the ability to manage care setting specific templates.	819
	5. The system MAY provide the ability to render alerts based on patient-specific clinical data (e.g., age for neonates, pediatrics, geriatrics; conditions for impaired renal function; medication).	820
	6. The system SHOULD provide the ability to maintain integrated chief complaint driven documentation templates.	821
	7. The system SHOULD provide integrated diagnosis driven documentation templates.	822
	8. The system SHOULD provide integrated disposition diagnosis driven documentation templates.	823
CPS.3.3 Function Support for Standard Care Plans, Guidelines, Protocols		824
Statement: Support the use of appropriate standard care plans, guidelines, protocols, and/or clinical pathways for the management of specific conditions. **Description:** A core capability of Clinical Decision Support is that of providing guidelines, plans and protocols to clinicians. These templates or forms can be specific for populations, medical conditions or individual patients. Before they can be used in care provision standard care plans, guidelines, protocols, and clinical pathways must be created. These templates or forms may reside within the system or be provided through links to external sources, and can be modified and used on a site specific basis. To facilitate retrospective decision support, variances from standard care plans, guidelines, protocols and clinical pathways can be identified and reported.		
	1. The system SHOULD provide the ability to capture and maintain site-specific care plans, guidelines, protocols, and clinical pathways.	825
	2. The system SHOULD provide the ability to maintain site-specific modifications to standard care plans, guidelines, protocols, and clinical pathways obtained from outside sources.	826
	3. The system SHOULD determine variances from standard care plans, guidelines, protocols, and clinical pathways and provide the ability to capture, maintain and render appropriate alerts, notifications and reports.	827
	4. The system SHOULD determine variances from standard care plans, guidelines and protocols for reportable conditions and provide the ability to capture, maintain and transmit related information to public health.	828
	5. The system SHOULD conform to POP.4 (Support for Monitoring Response Notifications Regarding a Specific Patient's Health).	829
	6. The system SHALL conform to function CPS.3.4 (Support for Context-Sensitive Care Plans, Guidelines, Protocols).	830
	7. The system SHALL conform to function CPS.3.1 (Support for Standard Assessments).	831
	8. The system SHOULD provide the ability to capture, maintain and render condition-specific guidelines (e.g., based on age or weight).	832
	9. The system SHOULD provide the ability to capture documents using standards-based documentation templates to support data exchanges.	833
	10. The system MAY provide the ability to maintain standard choices for disposition (e.g., reviewed and filed, recall patient, or future follow-up).	834
	12. The system SHOULD provide the ability to tag and render an indicator that a patient record is incomplete (e.g., not finalized or authenticated/signed).	835

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	13. The system SHOULD provide the ability to render an indicator that a patient record is incomplete (e.g., not finalized or authenticated/signed) when a discharge or transfer order is entered into the system.	836
	14. The system SHOULD tag specific missing elements/sections of incomplete records.	837
	15. The system SHOULD capture research protocol deviation information, including any verbatim text of protocol deviation.	838
CPS.3.4 Function Support for Context-Sensitive Care Plans, Guidelines, Protocols		839

Statement: Identify and present the appropriate care plans, guidelines, protocols, and/or clinical pathways for the management of patient-specific conditions that are identified in a patient clinical encounter.

Description: At the time of the clinical encounter (problem identification), recommendations for tests, treatments, medications, immunizations, referrals and evaluations are presented based on evaluation of patient-specific data such as age, gender, developmental stage, their health profile, and any site-specific considerations. These may be modified on the basis of new clinical data at subsequent encounters.

	1. The system SHALL provide the ability to render care and treatment plans that are sensitive to the context of patient data and assessments.	840
	2. The system SHOULD provide the ability to capture and maintain the choice of action in response to care plan suggestions.	841
	3. The system SHOULD identify, track and provide alerts, notifications and reports about variances from standard care plans, guidelines, protocols and clinical pathways.	842
	4. The system SHALL conform to function CPS.3.1 (Support for Standard Assessments).	843
	5. The system SHALL conform to function CPS.3.2 (Support for Patient Context-Driven Assessments).	844
	6. The system SHALL conform to function CPS.3.3 (Support for Standard Care Plans, Guidelines, Protocols).	845
	7. The system SHOULD provide the ability to capture, maintain, and render specialized medical treatment guidelines and protocols for unique physical, chemical, biological, and radiologic exposures.	846
	8. The system SHOULD provide the ability to manage biometric data, such as age-specific, weight-specific or height-specific normative data, to identify, track and provide alerts, notifications and reports about variances, care plans, guidelines and protocols.	847
	9. The system SHALL provide the ability to capture, maintain and render care plan templates to be used as a basis for the creation of new plans of care and treatment.	848
	10. The system SHOULD provide the ability to capture care plan templates from previously developed care plans.	849
CPS.3.5 Function Support for Research Protocols Relative to Individual Patient Care		848

Statement: Provide support for the management of patients enrolled in research protocols.

Description: The clinician is presented with appropriate protocols for patients participating in research studies, and is supported in the management and tracking of study participants.

	1. The system SHALL provide the ability to present protocols for patients enrolled in research studies.	850
	2. The system SHALL provide the ability to capture, maintain and render research study protocols.	851
	3. The system SHOULD conform to function AS.9.1 (Support Financial Plan Enrollment), to enable participation in research studies.	852
	4. The system SHOULD provide the ability to identify and track patients participating in research studies.	853
	5. The system MAY provide the ability to capture and maintain appropriate details of patient condition and response to treatment as required for patients enrolled in research studies.	854
	6. The system SHALL conform to CP.3.3 (Manage Clinical Documents and Notes) to capture patient condition and response to treatment.	855
	7. The system SHOULD capture, maintain and render research subject disposition information including date/time and trial phase/cycle of study completion/discontinuation as discrete elements.	856
	8. The system SHOULD determine patients eligible for known active clinical research protocols as defined by inclusion and exclusion criteria.	857
	9. The system SHOULD present information notifying staff of patient's eligibility for known active clinical research protocols as defined by inclusion and exclusion criteria.	858
	10. The system SHOULD capture research protocol deviation information, including any verbatim text of protocol deviation.	859
CPS.3.6		860

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Function Support Self-Care		
Statement: Provide the patient with decision support for self-management of a condition between patient/provider encounters. **Description:** Patients need to follow self-management plans related to their specific conditions. These plans may include schedules for home monitoring, laboratory tests, and clinical checkups; recommendations about nutrition, physical activity, tobacco use, etc.; and guidance or reminders about medications. Information to support self-care may be appropriately provided to: the patient, a surrogate (parent, spouse, guardian), or others involved directly in the patients self care.		
	1. The system SHALL provide the ability to capture, maintain and render patient guidelines, protocols and reminders related to specific clinical conditions.	861
	2. The system SHALL provide the ability to determine patient eligibility for, and render appropriate patient guidelines, protocols, and reminders for, self-management of clinical conditions.	862
	3. The system SHOULD conform to function CPS.2.5 (Support patient-originated Data).	863
	4. The system SHOULD conform to function CP.1.8 (Manage Patient and Family Preferences).	864
	5. The system SHALL conform to function CP.1.4 (Manage Problem list).	865
CPS.3.7 Function Capture Guidelines and Standards from External Sources		866
Statement: Capture practice guidance from a variety of “trusted” external sources. **Description:** Capture and import information provided by external health care organizations as relates to clinical practice guidelines (CPGs). External healthcare organizations in this function include, but are not limited to Patient management systems, Healthcare delivery organizations, Population health/surveillance organizations (e.g., local, regional, national and global Public Health services, PAHO, WHO), and professional, governmental, or industrial healthcare optimization initiatives.		
	1. The system SHOULD import recognized-standard, and/or locally-defined standard -based guidance, such as clinical practice guidelines.	867
CPS.3.8 Function Manage Documentation of Clinician Response to Decision Support Prompts		868
Statement: Capture the decision support prompts and manage provider actions to accept or override decision support prompts. **Description:** Provider actions in response to prompts offered from decision support are captured. Management of these actions be accomplished at the patient level or aggregated for patient population, research protocol, or organizational trending.		
	1. The system SHALL provide the ability to capture that clinical decision support prompts have been rendered and user response to accept or override those prompts.	869
	2. The system SHALL provide the ability to capture the reason for variation from the decision support prompt.	870
	3. The system SHOULD provide the ability to render recorded variances from decision support prompts.	871
	4. The system MAY provide the ability to render a notification to users that a decision support alert has been disabled (e.g., notification to administrators or the user who disabled the alert).	872
CPS.3.9 Function Clinical Decision Support System Guidelines Updates		873
Statement: Capture and maintain updates of clinical decision support system guidelines and associated reference material. **Description:** System content such as discharge instructions, clinical guidelines, formularies, and other knowledge bases should be capable of being maintained and updated, independent of a particular encounter. Clinical decision support rules may be applied to the system using a manual process. As standards are developed to represent these rules, an automated update will be recommended. Any process to update decision support rules should include the verification of the appropriateness of the rules to the system. This may include but not be limited to authenticity of the source, the currency of the version, and any necessary approvals before updates can take place.		
	1. The system SHALL provide the ability to maintain the clinical content or rules utilized to generate clinical decision support reminders and alerts.	874
	2. The system SHOULD provide the ability to render information that will allow validation that the most applicable version (of the decision support rules) is utilized for the update.	875
	3. The system SHOULD capture the date of update of the decision support rules.	876
CPS.3.10 Function Support for Identification of Potential Problems and Trends		877
Statement: Identify conditions of clinical interest, identify trends that may lead to significant problems, and provide prompts for clinical decision support.		

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	Description: Providing the health care provider with a prompt, notification or alert for identified specific concerns of clinical interest is a cornerstone of Clinical Decision Support. When personal health information is collected directly during a patient visit, input by the patient, or acquired from an external source (laboratory results), it is important to be able to identify and tag potential problems and trends that may be condition- or patient-specific (given the individual's personal health profile), or changes warranting further assessment.	
	1. The system SHALL conform to function CP.3.1 (Conduct Assessments) and provide the ability to access standard assessment data in the patient record.	878
	2. The system SHOULD provide the ability to present health standards and practices according to scope of practice at the time of the encounter.	879
	3. The system SHOULD provide the ability to analyze patient context-driven assessments and additional health information against best practices in order to identify patient-specific growth or development patterns, health trends and potential health problems.	880
	4. The system SHOULD provide the ability to manage rules for defining trends.	881
	5. The system SHOULD present the provider with trends based on patient contextual health information.	882
	6. The system MAY provide the ability to transmit trends and related rules to external systems (e.g., PHR systems).	883
	7. The system SHOULD provide the ability to render laboratory data in numerical (tabular or spreadsheet) form over time to enable trend analysis.	884
	8. The system SHOULD provide the ability to render laboratory data in graphical form over time to enable trend analysis.	885
	9. The system MAY provide the ability to integrate the laboratory result trends with items from the Problem List and other items such as vital signs.	886
	10. The system MAY provide the ability to render prescription timelines (i.e., events related to a prescription from order to administration) in graphic form over time to enable trend analysis.	887
	11. The system SHOULD present the provider with information that may prompt an order for additional assessments, testing or adjunctive treatment.	888
	12. The system SHOULD conform to function CPS.3.8 (Manage Documentation of Clinician Response to Decision Support Prompts).	889
	13. The system MAY provide the ability to integrate or link health information contained in the patient record with appropriate patient education materials.	890
	14. The system SHOULD conform to function CPS.3.4 (Support for Context-Sensitive Care Plans, Guidelines, Protocols).	891
	15. The system MAY provide the ability to tag an individual patient's conditions of clinical interest.	892
	16. The system MAY provide the ability to maintain and render the list of individual patient's conditions of clinical interest that have been tagged.	893
	17. The system MAY provide the ability to create a configurable notification for tagged conditions of clinical interest.	894
	18. The system MAY provide the ability to render details on the patient's conditions of clinical interest that have been tagged.	895
CPS.3.11 Function Support Other Encounter and Episode of Care Documentation		896
	Statement: Where not covered above, provide the means to manage and organize the documentation of the health care needed and delivered during an encounter/episode of care. **Description:** Using data standards and technologies that support interoperability, effective documentation of an encounter can promote patient- centered/oriented care and enables real-time, immediate point-of-service care delivery. Effective encounter and episode-of-care documentation can facilitate efficient work flow and improve operations performance. This can help to ensure the integrity of (1) the health record, (2) public health, financial and administrative reporting, and (3) the healthcare delivery process.	
	1. The system SHALL provide the ability to render patient data by encounter, including previous admissions and episodes of care.	897
	2. The system SHOULD provide the ability to capture and annotate patient encounter data from external systems, such as diagnostic tests and reports.	898
	3. The system SHALL provide the ability to capture encounter documentation by one or more of the following input methods: - direct keyboard entry of text; - structured data entry utilizing templates, forms, pick lists or macro substitution; and- dictation with subsequent transcription of voice to text, either manually or via voice recognition system.	899
	4. The system SHOULD provide the ability to capture and maintain presentation filters that are specific to the types of encounter (e.g., care provider specialty, location of encounter, date of encounter, associated diagnosis).	900
CPS.3.12 Function Manage Health Information Record Quality		901

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	Statement: Support grammatical and lexical integrity of the health record by providing medical spelling, thesaurus and grammar ready assistance during clinical documentation as well as enabling shortcuts for pre-defined text. **Description:** Users and patients will benefit from features that enable rapid checking of spelling and grammar, a medical thesaurus function as well as text shortcuts to expand pre-defined text during clinical documentation. A shortcut may also be defined to trigger a specific system function such as the opening of a pre-defined template. These functions may be defined at an enterprise level based on scope of practice, organizational policy, and/or jurisdictional law. However, pre-defined text may also be configured by provider or provider type.	
	1. The system SHOULD determine and present the correct medical spelling based on an integrated realm-based medical spelling function.	902
	2. The system SHOULD determine and present the correct medical thesaurus based on an integrated realm-based medical thesaurus function.	903
	3. The system SHOULD determine and present the correct medical grammar based on an integrated realm-based medical grammar function.	904
	4. The system SHOULD determine and present the appropriate pre-defined text when an associated shortcut is entered during clinical documentation.	905
	5. The system SHOULD determine and present personally pre-defined text when triggered by the associated macro based on an integrated personally pre-defined-text function.	906
	6. The system SHOULD provide the ability to manage shortcut for the insertion of templates (e.g., insert new patient assessment template when Ctrl-A is entered).	907
	7. The system SHOULD determine and present the appropriate template when the associated shortcut is entered.	908
	8. The system MAY provide the ability to manage an integrated enterprise pre-defined text function and associated macros.	909
	9. The system MAY provide the ability to manage an integrated personally pre-defined text function and associated macros.	910
CPS.4 Header Support Orders		911
	Statement: Support for Orders is required to ensure that appropriate decision support and safety checks are conducted by the system at the time of ordering as well as at the time of dispensing medications or immunizations. **Description:** Support for orders includes the management of order set templates, the support for specific types of orders including medication, immunization, non-medication, diagnostic tests as well as blood products and biologicals.Decision Support for orders includes checking for allergies or adverse interactions, dosing checking and issuing the appropriate warnings. It may also include functions to increase ordering efficiency such as verifying all necessary information to fulfill the order is captured and making recommendations for supporting orders.A component of ordering medications and immunizations is the dispensing of those orders and, where applicable, this function will include criteria to support dispensing. Note: Administration of Orders is included in CPS.6 (Support for Treatment Administration).	
CPS.4.1 Function Manage Order Set Templates		915
	Statement: Maintain order set templates based on preferred standards, provider preferences, organizational policy or other criteria. **Description:** Order set templates, which may include medication orders, allow a care provider to choose common orders for a particular circumstance or disease state according to standards (e.g., best practice guidelines) or other criteria. Order Set Templates may be defined to allow or not allow the provider to modify (add/remove/update) specific orders when applying them to a specific patient.	
	1. The system SHALL provide the ability to manage order set templates, including creation from provider input and version control.	916
	2. The system MAY capture an order set template based on a specific patient's orders/data according to scope of practice, organizational policy, and/or jurisdictional law.	917
	3. The system SHOULD provide the ability to manage order set templates created for conditions or diseases.	918
	4. The system MAY provide the ability to capture the practice standards or criteria used to create order set templates (e.g., as a note attached to the template).	919
	5. The system MAY render order set templates to providers based on diagnoses, conditions, or symptoms to aid decision support.	920
	6. The system SHALL conform to function CP.4.1 (Use Order Sets).	921
	7. The system SHOULD provide the ability to capture and maintain an order set template containing all order types relevant to a particular problem (e.g., laboratory , radiology, medications, nursing tasks, and materials management).	922
	8. The system SHOULD capture, maintain and render order set templates customized by patient age, sex, or other patient factors.	923
	9. The system SHOULD capture, maintain and render order set templates customized by provider type.	924
	10. The system MAY capture, maintain and render order set templates customized by provider.	925

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	11. The system SHOULD capture, maintain and render standing order set templates for triage or for specific conditions.	926
	12. The system MAY provide the ability to manage links or access to applicable clinical standards and reference materials within an order set.	927
	13. The system SHOULD provide the ability to capture, maintain and render the date that an order set was last modified.	928
	14. The system SHOULD provide the ability to capture, maintain and render order set templates that are pre-configured with order entry information.	929
	15. The system SHOULD provide the ability to capture, maintain and render multiple choices of orders within an order set template for clinician selection.	930
	16. The system SHOULD provide the ability to capture, maintain and render text instructions or recommendations within order sets.	931
	17. The system SHALL provide the ability to capture a name for an order set.	932
	18. The system SHALL provide the ability to render order set(s) by name.	933
	19. The system SHALL provide the ability to render orders in the same manner regardless of the manner in which they were ordered (individually or from within an order set).	934
	20. The system SHOULD provide the ability to integrate order sets within other order sets.	935
	21. The system SHALL determine and render drug-drug interaction and drug-allergy reaction checking to orders placed through an order set in the same way as orders placed individually.	936
	22. The system MAY provide the ability to render reports on the use of order sets, including such data as orders, ordering provider, date/time ordered, basic patient data (e.g., demographics), and condition(s) being treated.	937
	23. The system SHALL provide the ability to capture, maintain and render order sets that allow or disallow individual orders to be selected or deselected by the user (e.g., standing orders that can't be modified during care provision).	938
	24. The system MAY provide the ability to capture and maintain order set preferences.	939
CPS.4.2 Function Support for Medication and Immunization Ordering		940

Statement: Provide functionality to alert providers to potential medication and immunization ordering errors (such as wrong patient, wrong drug, wrong dose, wrong route and wrong time).

Description: During medication or immunization ordering it is critical to minimize potential errors that can cause adverse events. This is accomplished by the EHR system through the use of clinical decision support and prompting to validate the order at time of ordering. Whist many of these functions are more commonly associated with medication ordering; they also apply to ordering of immunizations when such ordering occurs. The support includes the checking for drug/drug interactions, checking against documented allergies or previous adverse events as well as validating patient-specific dosing and providing appropriate warnings. support for medial ordering efficiencies also ensures that orders are appropriate and contain all required supporting information.

	1. The system SHALL provide the ability to maintain a discrete list of orderable medications and immunizations (i.e., formulary).	941
	2. The system SHOULD provide the ability to render a paper copy of medication and immunization prescriptions for the patient to take to a pharmacy for fulfillment.	942
	3. The system SHOULD provide the ability to render electronic medication and immunization prescriptions to a pharmacy.	943
	4. The system SHOULD provide the ability to render an alert or notification that a non-formulary medication or immunization was ordered according to scope of practice, organizational policy, and/ or jurisdictional law.	944
	5. The system SHOULD provide the ability to exchange medication and immunization orders with an external medication management system.	945
	6. The system SHOULD update a patient's medication list to show that the medication is discontinued when a prescribed medication or standing medication order is discontinued.	946
	7. The system SHOULD provide the ability to manage specific formularies according to scope of practice, organizational policy, and/or jurisdictional law.	947
	8. The system SHALL provide the ability to maintain directly or by reference a list (i.e. formulary) of medications and immunizations which includes a unique identifier for each medication / immunization.	948
	9. The system MAY provide the ability to capture the duration of a drug interaction warning after the prescription has run-out.	949
	10. The system SHOULD provide the ability to capture and maintain the severity level at which warnings are displayed.	950
	11. The system SHOULD provide the ability to capture, maintain and render appropriate responses to severity levels at which warnings are displayed.	951
CPS.4.2.1 Function		952

Section/Id#: Type: Name:	Conformance Criteria	Row#
Support for Medication Interaction and Allergy Checking		

Statement: Identify medication interaction warnings at the time of medication or immunization ordering, or prescribing, as well as at the time of dispensing.

Description: The clinician is alerted to medication-medication, medication-allergy, medication-food, medication-supplement (herbal or dietary) interactions at levels appropriate to the health care setting and with respect to the patient condition. These alerts may be customized to suit the user or group.Note, medication may be affected by food or diatary choices; whist this is not considered an interaction it is consequently not included in this function; however, the provision of drug-food effectiveness in information to be provided to the patient is included in the function CP.8.1 (Generate, Record and Distribute Patient-Specific Instructions).If the patient's condition is one where, in order to view the necessary components of the health record, patient authorization or consent is required; then the system should show the

medication but mask the condition for which the medication is prescribed until the required consent or authorization is available. In an emergent situation, where all health information is required to provide the most effective treatment, and it is not possible to obtain an authorization or consent; the system should provide an override (e.g., "break the glass") function to allow access to the diagnosis or problem for which a medication was ordered, according to scope of practice, organizational policies, and/or jurisdictional law.

	1. The system SHALL determine and present the presence of interactions between medications ordered and medications already on the current medication list.	953
	2. The system SHALL determine and present the presence of interactions between medications ordered and true-allergies on the current allergy list.	954
	3. The system SHOULD determine and present the presence of contraindications between medications ordered and patient's current health condition and characteristics (e.g., gender, age, weight, smoking status, pregnancy status, renal function).	955
	4. The system MAY determine and present the presence of interactions between medications ordered and ingestibles (e.g., food or beverages).	956
	5. The system MAY determine and render the presence of interactions between medications ordered, medications on the current medication list as well as previous medications according to organization policy, and/or jurisdictional law.	957
	6. The system SHOULD determine and present the presence of interactions between medications ordered and supplements (i.e. herbal or dietary) on the current medication list.	958
	7. The system SHALL provide the ability to capture, maintain and render a medication order despite alerts for interactions, and/or allergies being present.	959
	8. The system SHOULD provide the ability to determine and present the presence of duplicate therapies.	960
	9. The system SHALL conform to function CPS.3.8 (Manage Documentation of Clinician Response to Decision Support Prompts) and provide the ability to document why a drug interaction warning was overridden.	961
	10. The system SHOULD determine the presence of drug-laboratory interactions and present information to the clinician that certain laboratory test results may be impacted by a patient's medications.	962
	11. The system SHOULD provide the ability to determine, maintain, and present medications noted to be ineffective for the patient in the past.	963
	12. The system SHALL provide the ability to present, on demand, potential medication-allergy, medication-medication and medication-condition interactions based on current medications, active allergies and active problems lists.	964
	13. The system SHOULD present the rationale for a medication interaction alert.	965
	14. The system SHALL conform to CP.1.3 (Manage Medication List) in order to maintain a coded list of medications for the patient (including a unique identifier for each medication).	966
	15. The system MAY render an alert to the user if the medication interaction information or database has not been updated within a set time parameter.	967
	16. The system SHOULD determine and render notifications regarding drug-drug interaction(s) to the patient's provider or to the patient's care team when relevant clinical information changes (e.g., new clinical data from an internal or external source) according to scope of practice, organizational policy, and/or jurisdictional law.	968

CPS.4.2.2 Function Support for patient-specific Dosing and Warnings		969

Statement: Identify and present appropriate dose recommendations based on known patient conditions and characteristics at the time of medication ordering and dispensing.

Description: The clinician is alerted to patient-specific contraindications and warnings e.g., pregnancy, breast-feeding or occupational risks, hepatic or renal insufficiency. The preferences of the patient may also be presented (e.g., reluctance to use an antibiotic). Additional patient parameters, such as age, gestation, genetic disposition, height, weight, and Body Surface Area (BSA), shall also be incorporated.

	1. The system SHALL determine and render contraindications to the ordered dosage range.	970
	2. The system SHOULD determine and render an appropriate medication dosage range, specific for each known patient condition (e.g., diagnosis, pregnancy) and parameter (e.g., height, weight, pulse).	971

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	3. The system SHOULD conform to CPS.9.2.3 (Support for Provider Pharmacy Communication) to support transmitting documented reasons for overriding a medication alert to the pharmacy .	972
	4. IF the maximum daily doses are known, THEN the system SHALL present the maximum dose per day in dosing decision support.	973
	5. The system SHOULD provide the ability to determine and render medication dose by patient body weight.	974
	6. The system SHOULD provide the ability to determine and render medication dose by body surface area.	975
	7. The system SHOULD provide the ability to determine and render medication dose recommendations based on patient parameters, including age and diagnostic test results.	976
	8. The system MAY determine when no recommended medication dosing is available that is specific to known patient conditions and parameters, such as age or weight, and render notifications to the provider.	977
	9. The system SHOULD determine whether no recommended pediatric medication dosing is available and render notifications to the provider according to scope of practice.	978
	10. The system SHOULD determine and render medication dosages using all components of a combination medication (e.g., acetaminophen-hydrocodone).	979
	11. The system SHOULD provide the ability to capture the factors used to calculate the future dose for a given prescription.	980
	12. The system SHALL determine whether data required to compute a dose are missing or invalid and render notifications to the provider.	981
	13. IF the system determines a value that affects medication dosing recommendations (e.g., creatinine clearance), THEN the system SHOULD maintain the formula used for the calculation.	982
	14. IF the system supports electronic communication with the pharmacy system, THEN the system SHOULD provide the ability to transmit the documented reasons for overriding a medication alert.	983
	15. The system SHOULD provide the ability to determine and maintain the cumulative drug dose.	984
	16. The system SHOULD determine and render a notification if the cumulative medication dose exceeds the recommended dose.	985
	17. The system SHOULD provide the ability to maintain and uniquely render medications with look-alike names with recommended conventions (e.g., from FDA or Institute for Safe Medication Practices), such as, "Tall Man lettering".	986
	18. The system SHOULD provide the ability to determine the presence of medication interactions when multiple medications of the same therapeutic or pharmacologic class are ordered and present notifications when such medications are selected during prescribing/ordering.	987
	19. The system SHOULD provide the ability to determine and render recommended medication for substitution based on availability, cost, generic equivalent, and according to organizational policy, and/or jurisditional law.	988
	20. The system SHALL provide the ability to capture, store and render information concerning medication orders including any alerts following screening of medication orders and the clinician responses (place, modify or cancel order).	989
	21. The system SHOULD provide the ability to capture and render medication warnings and recommendations from official governmental agencies (e.g., FDA, regional centers).	990
	22. The system SHOULD provide the ability to extract reference information for prescribing/warning (e.g., FDA warnings in the US realm).	991
	23. The system MAY provide the ability to store configuration parameters (e.g., coefficients, exponents, formulas) regarding the patient's body surface area.	992
CPS.4.2.3 Function Support for Medication Ordering Efficiencies		993

Statement: Provide the tooling necessary to support efficient medication ordering.

Description: Support efficient medication ordering workflows by allowing medications to be sorted and reviewed by key attributes, e.g., generic or trade names. Also support editing medication orders across multiple instances of an order and capturing medication orders in order sets.

	1. The system SHOULD present a medication compendia or formulary content (e.g., drug, dose, route and SIG) to facilitate the selection of the medication to be ordered.	994
	2. The system MAY provide the ability to link instructions to all medications within a given class of medications.	995
	3. The system MAY render a list of frequently-ordered medications by diagnosis by provider which could include the full details of the medication, including SIG, quantity, refills, dispense as written, etc. and capture the provider's selection.	996
	4. The system MAY provide the ability to capture medications by therapeutic class, and/or indication.	997
	5. The system MAY provide the ability to capture, maintain and render medication samples dispensed, including lot number and expiration date.	998

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	6. The system MAY provide the ability to tag that the medication sample was dispensed in the office.	999
	7. The system MAY provide the ability to capture and render reminders to patients regarding necessary follow up tests based on the prescribed medication (e.g., reminders may be sent manually or automatically via a pre-determined rule).	1000
	8. The system SHOULD provide the ability to capture and render reminders to the clinicians regarding necessary patient follow up tests, based on the prescribed medication.	1001
CPS.4.2.4 Function Support for Medication Recommendations		1002

Statement: Offer recommendations and options in medication treatment protocols as well as supporting medication monitoring on the basis of patient diagnosis, patient characteristics, or therapeutic guidelines and protocols.

Description: The system should list medication treatment options on the basis of practice standards and the patient's conditions, diagnoses and characteristics (e.g., obesity, occupation). The system may also provide prompts and notifications to support medication monitoring.

	1. The system SHALL conform to function CPS.4.2.2 (Support for Patient-Specific Dosing and Warnings).	1003
	2. The system SHOULD determine and present recommendations for medication regimens based on findings related to the patient diagnosis.	1004
	3. The system SHALL determine and present recommendations for alternative medication treatments on the basis of practice standards, patient conditions and characteristics.	1005
	4. The system SHOULD determine and render recommendations for monitoring (e.g., labs, behaviors, adverse reactions, side effects) as appropriate to a particular medication.	1006
CPS.4.2.5 Function Support for Medication Reconciliation		1007

Statement: Review a patient's medication information (from more than one source) and reconcile conflicts.

Description: Medication reconciliation is the process of comparing a patient's medication information (from all sources) to the medications that the patient is actually has been taking. Medication reconciliation is done to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions. Medication Reconciliation should be done at every episode or transition of care in which new medications are ordered or administered, existing orders are rewritten or where medications may influence the care given.Transitions in care include changes in setting, service, practitioner, or level of care. The Medication Reconciliation process comprises five includes several steps: (1) develop a list of current medication list of medications that the patient is taking, (2) develop a list of medications to be prescribed or recommended (3) compare the medication information from

all sources; (4) make shared and informed clinical decisions based on the comparison and provide the ability to document the interaction; and (5) communicate the updated medication information to the healthcare teams, the patient and appropriate caregivers. For example: If a patient's pain, anticoagulation, hyperglycemia or other high risk therapy is being managed by a specialist, the healthcare team must be aware to avoid prescribing an additional equivalent of this medication.(6) Verify the patient's/caregiver's understanding and agreement to the patient's medication treatment plan.(7) Standardization of shared medication information (name, dose, instructions, indications, prescriber, etc)

	1. The system SHALL provide the ability to manage the process of medication reconciliation according to scope of practice, organizational policy, and/or jurisdictional law.	1008
	2. The system SHOULD provide the ability to update a medication order directly from medication reconciliation.	1009
CPS.4.3 Function Support for Non-Medication Ordering		1010

Statement: Facilitate provider review and validation of order information to make it pertinent, effective and resource-conservative at the point of order entry.

Description: The system assists provider during order entry for therapies, treatments, care, diagnostics and medical supplies and equipment. Support includes, for example: alerts to duplicate orders, missing results or other information required to initiate order, suggested corollary orders, order sets, best practice guidelines, institution-specific order guidelines and patient diagnosis specific recommendations. Also alerts for orders that may be inappropriate or contraindicated for specific patients, for example, X-rays on pregnant women.

	1. The system SHALL determine and render, at the time of order entry, required order entry components for non-medication orders.	1011
	2. The system SHALL render an alert at the time of order entry if a non-medication order is missing required information.	1012
	3. The system SHOULD render an alert for orders that may be inappropriate or contraindicated for specific patients at the time of order entry.	1013
	4. The system SHALL provide the ability to capture, maintain and render elapsed time parameters for purposes of duplicate order checking.	1014

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	5. The system SHOULD provide the ability to link a non-medication order with related clinical problem(s), and/or diagnosis code(s).	1015
	6. The system SHOULD capture and maintain information required for pediatric ordering (e.g., age and weight of the child for radiology or laboratory orders) according to scope of practice.	1016
	7. The system SHOULD auto-populate the answers to questions required for diagnostic test ordering from data within the medical record or captured during the encounter.	1017
	8. The system SHOULD provide the ability to tag certain diagnostic studies that may/should not be repeated within a prescribed period of time and present an indicator at time of ordering.	1018
	9. The system MAY provide the ability to capture and render reminders to patients regarding necessary follow up tests based on the prescribed medication (e.g., reminders may be sent manually or automatically via a pre-determined rule).	1019
	10. The system SHOULD provide the ability to capture and render reminders to the clinicians regarding necessary patient follow up tests based on the prescribed medication.	1020
	11. The system SHALL provide the ability to manage the process of order reconciliation according to scope of practice, organizational policy, and/or jurisdictional law.	1021
CPS.4.4 Function Support Orders for Diagnostic/ Screening Tests		1022
Statement: This function has not been defined and is captured here as a place-holder for potential further development of the Functional Model and to maintain alignment with the corresponding CP section. **Description:** None Defined at this time.		
CPS.4.5 Function Support Orders for Blood Products and Other Biologics		1023
Statement: This function has not been defined and is captured here as a place-holder for potential further development of the Functional Model and to maintain alignment with the corresponding CP section. **Description:** None Defined at this time.		
CPS.4.6 Header Support for Referrals		1024
Statement: Evaluate patient information for referral indicators. **Description:** The system assists with patient referrals, including prompting the provider with referral recommendations based on the patient's medical record. When creating the referral order, support is provided in the compilation of relevant clinical and behavioral health results, demographic and insurance information (if available). Standardized or evidence based protocols for workup prior to referral may also be presented.		
CPS.4.6.1 Function Support for Referral Process		1025
Statement: Evaluate referrals within the context of a patient's healthcare data. **Description:** The system assists with patient referrals, including compilation of relevant clinical and behavioral health results, demographic and insurance information (if available). Standardized or evidence based protocols for workup prior to referral may also be presented.		
	1. The system SHALL provide the ability to capture and render clinical and administrative data (e.g., insurance information) as part of the referral process.	1026
	2. The system SHOULD provide the ability to capture and render test and procedure results with a referral.	1027
	3. The system MAY provide the ability to capture and render standardized or evidence based protocols (e.g., AHRQ evidence-based practice guidelines) with the referral.	1028
	4. The system SHALL provide the ability to render clinical and administrative data, as well as test and procedure results to the referred-to provider.	1029
	5. The system SHALL provide the ability to capture and render referral orders with detail adequate for correct routing to the referred-to provider.	1030
	6. The system SHOULD provide the ability to transmit clinical and administrative data, as well as test and procedure results to the referred-to provider.	1031
	7. The system SHALL provide the ability to capture and render age appropriate data as part of the referral process according to scope of practice. (e.g., inclusion of growth chart in pediatric referral).	1032
	8. The system SHOULD provide the ability to capture a provider's schedule for receiving referrals.	1033
	9. IF the system provides the ability to capture provider schedules for receiving referrals, THEN the system SHOULD determine and render available provider appointments based on their schedules at the time of referral order entry.	1034

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	10. The system MAY provide the ability to transmit a referral to multiple providers.	1035
CPS.4.6.2 Function Support for Referral Recommendations		1036

Statement: Evaluate patient data and recommend patient referral based on specific criteria.

Description: The system assists evaluation of certain patient conditions which may lead to a recommendation for referral, for example, for smoking cessation counseling if the patient is prescribed a medication to support cessation screening or assessment for behavioral health conditions. Additionally the system may present recommendations based on other orders – for example, an order for Adriamycin, where additional testing such as a MUGA (heart) scan or an Echocardiogram should be completed prior to administration, could result in a recommended referral to radiology, and/or cardiology.

	1. The system SHALL determine and present recommendations for potential referrals based on patient factors or guidelines including: clinical guidelines, jurisdictionally-based guidelines, patient diagnosis(es), and/or patient condition (e.g., for smoking cessation counseling if the patient smokes cigarettes or other tobacco products or was prescribed a medication to support smoking cessation).	1037
CPS.4.6.3 Function Support for Electronic Referral Ordering		1039

Statement: Enable the transmission of electronic referral orders from the EHR-S.

Description: When a referral order is created in the system, the system should have the ability to compose the referral package, including any supporting clinical and administrative information, and transmit the referral order to the referred-to provider electronically.

	1. The system SHALL provide the ability to export or transmit electronic referral(s) (e-referral), including all supporting clinical and administrative information to other care provider(s), whether internal or external to the organization.	1040
	2. The system SHOULD provide the ability to capture and maintain a minimum set of required information that must be included in an e-referral to be transmitted.	1041
	3. IF the system provides the ability to capture a minimum set of required information that must be included in an e-referral to be transmitted, THEN the system SHALL determine if the minimum set of information is satisfied prior to transmitting an e-referral.	1042
	4. IF the system provides the ability to capture a minimum set of required information that must be included in an e-referral to be transmitted and determines that the minimum set is not satisfied, THEN the system SHALL render prompts to capture missing information prior to transmitting an e-referral.	1043
	5. The system SHALL provide the ability to capture administrative information (e.g., insurance information, consents and authorizations for disclosure) for inclusion in an e-referral according to scope of practice, organizational policy, and/or jurisdictional law.	1044
	6. The system SHALL provide the ability to capture clinical information (e.g., medications, diagnostic results) for inclusion in an e-referral.	1045
	7. The system SHALL provide the ability to present e-referrals, including all attached information, and capture an e-signature prior to transmission.	1046
	8. The system MAY provide the ability to capture diagnosis-based requirements for sending an e-referral based on the referred-to provider's requirements (e.g., a breast cancer specialist would not want to receive a colon cancer patient referral).	1047
	9. IF the system provides the ability to capture diagnosis-based requirements for sending an e-referral based on the referred-to provider's requirements, THEN the system SHALL provide the ability to present those requirements at the time of referral order entry.	1048
	10. The system MAY provide the ability to define clinical requirements (e.g., history, physical exam, laboratory or Radiology results) for sending an e-referral based on the referred-to provider's requirements (e.g., a breast cancer specialist may require a positive mammogram before accepting the referral).	1049
	11. IF the system provides the ability to capture clinical requirements for sending an e-referral based on the referred-to provider's requirements, THEN the system SHALL provide the ability to present those requirements at the time of referral order entry.	1050
	12. The system SHALL capture and render a electronic acceptance or rejection of an e-referral request.	1051
	13. The system SHALL capture and render the reason for an e-referral acceptance or rejection.	1052
	14. The system MAY capture a standards-based coded reason (e.g., SNOMED) for an e-referral acceptance or rejection.	1053
	15. The system SHOULD capture and render an electronic request for additional information from the referred-to provider.	1054
	16. The system SHALL provide the ability to amend an e-referral order with additional information.	1055
	17. The system SHOULD provide the ability to re-export or re-transmit an e-referral, including all supporting clinical and administrative information to another care provider (s), whether internal or external to the organization.	1056

Section/Id#: Type: Name:	Conformance Criteria	Row#
	18. The system MAY conform to function AS.9.2 (Support Financial Eligibility Verification) and display the results of e-referral eligibility and health plan/payer checking prior to approval of an referral order.	1057
CPS.5 Function Support for Results		1058
Statement: Evaluate results and notify provider and patient of results within the context of the patient's healthcare data. **Description:** The system suggests result interpretations and notifications including those for, abnormal results, trending of results (such as discrete laboratory values over time), evaluation of pertinent results at the time of provider order entry (such as evaluation of laboratory results at the time of ordering a radiology exam), evaluation of incoming results against active medication orders.		
	1. The system SHALL render alerts for a result that is outside of a normal value range.	1059
	2. The system SHOULD provide the ability to render trend results.	1060
	3. The system MAY provide the ability to render pertinent results for analysis at the time of order entry (e.g., evaluation of laboratory results at the time of ordering a radiology exam).	1061
	4. The system MAY provide the ability to capture and render the abnormal result value that triggered the display of alerts and flags (e.g., a value to trigger an high-high (HH) or low-low (LL) flag).	1062
	5. The system SHOULD present alerts for a result that is outside of age specific normal value ranges.	1063
	6. The system SHALL tag critical value results that have not been acknowledged.	1064
	7. The system SHOULD provide the ability to render notifications to the providers who participate in the care team when monitored events/parameters indicate irregularities.	1065
	8. The system MAY provide the ability to render notifications to the patient when monitored events/ parameters indicate irregularities.	1066
	9. The system SHOULD provide the ability to determine and render decision support algorithms based upon results.	1067
CPS.6 Header Support Treatment Administration		1068
Statement: Alert providers to potential administration errors (such as wrong patient, wrong drug, wrong dose, wrong route and wrong time) in support of safe and accurate medication and immunization administration and support administration workflow. **Description:** The system promotes the reduction of errors at time of administration and at the point of care by positive patient identification, by checks on drug identification including name, dose, route and designated time of administration. Access to drug monograph information may be provided to allow providers to check details about a drug and enhance patient education. Workflow for administration is supported through prompts and reminders regarding the "window" for timely administration of medications and immunizations.		
CPS.6.1 Function Support for Medication Administration		1069
Statement: Alert providers to potential administration errors (such as wrong patient, wrong drug, wrong dose, wrong route and wrong time) in support of safe and accurate medication administration and support medication administration workflow. **Description:** The system promotes the reduction of medication errors at time of administration and at the point of care by positive patient identification, by checks on drug identification including name, dose, route and designated time of administration. Access to drug monograph information may be provided to allow providers to check details about a drug and enhance patient education. Medication administration includes the administration of medication therapies such as chemotherapy. Workflow for medication administration is supported through prompts and reminders regarding the "window" for timely administration of medications.		
	1. The system SHALL determine and render notifications regarding potential administration errors such as wrong patient, wrong drug, wrong dose, wrong route and wrong time as it relates to medication administration at the point of medication administration.	1070
	2. The system SHOULD determine and render reminders regarding the date/time range for timely administration of medications.	1071
	3. The system MAY determine and render recommendations for alternative medication administration techniques based on age, developmental stage, weight, physiological status, mental status, educational level, and past physical history of the patient.	1072
	4. The system MAY conform to function CPS.7.1 (Access Healthcare Guidance) to enable access to external medication guidance (e.g., drug monograph or package insert information).	1073
	5. The system SHOULD determine and render physiological parameters or task completion that must be checked and recorded prior to medication administration.	1074
	6. The system MAY provide the ability to render at the time of medication administration that an alert was triggered during medication ordering.	1075
	7. The system MAY provide the ability to determine and render medication screening alerts from the electronic record of medication administration.	1076
	8. The system SHOULD provide the ability to link to reference information/knowledge resources at the time of medication administration.	1077

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	9. The system SHOULD determine and render relevant laboratory results (e.g., serum creatinine level for medication metabolized by the renal system) during medication ordering or administration.	1078
CPS.6.2 Function Support for Immunization Administration		1079

Statement: Alert providers to potential administration errors (such as wrong patient, wrong drug, wrong dose, wrong route and wrong schedule) in support of safe and accurate immunization administration and support immunization administration workflow.

Description: The system assists in reduction of medication errors at time of administration by positive patient identification and by checks on immunization identification. Workflow for immunization administration is supported through prompts and reminders regarding the “window” for timely administration of immunizations.

	1. The system SHALL determine and render notifications regarding potential administration errors such as wrong patient, wrong drug, wrong dose, wrong route and wrong time as it relates to immunization administration at the point of immunization administration.	1080
	2. The system SHOULD determine and render reminders regarding the date/time range for timely administration of immunizations.	1081
	3. The system SHOULD provide the ability to capture the date/time range for due/overdue immunization reminders according to scope of practice, organizational policy, and/or jurisdictional law.	1082
	4. The system MAY determine and render recommendations for alternative immunization administration techniques based on age, developmental stage, weight, physiological status, mental status, educational level and past physical history of the patient.	1083
	5. The system MAY conform to function CPS.7.1 (Access Healthcare Guidance) to enable access to external immunization guidance (e.g., in the US, the Center for Disease Control immunization recommendations).	1084
	6. The system SHOULD determine and render physiological parameters or task completion that must be checked and recorded prior to immunization administration.	1085
	7. The system MAY provide the ability to render at the time of immunization administration that an alert was triggered during immunization ordering.	1086
	8. The system MAY provide the ability to determine and render immunization screening alerts from the electronic record of immunization administration.	1087
	9. The system SHOULD provide the ability to link to reference information/knowledge resources at the time of immunization administration.	1088
	10. The system SHALL determine and render potential adverse or allergic reactions (based on the patient's allergen history and adverse reaction history) for all immunizations when rendering immunization administration information.	1089
	11. The system SHOULD determine and present recommendations for required immunizations based on patient risk factors.	1090
	12. The system SHOULD provide the ability to analyze immunization histories from multiple sources for reconciliation (e.g., align history imported from Immunization Information System and local history).	1091
CPS.6.3 Function Support for Safe Blood Administration		1092

Statement: Facilitate real-time checks for potential blood administration errors.

Description: To reduce errors at the time of blood product administration, the system assists in positive patient identification, along with checks and alerts regarding the blood product to be administered, including the identification of the blood product, the amount to be delivered, and the route and time of the administration of the blood product.

	1. The system SHALL present, at the time of administration, information necessary to correctly identify the patient and accurately administer blood products including patient name, blood product number, amount, route, product expiration date and time of administration.	1093
	2. The system SHALL provide the ability to capture validation of the correct matching of the patient to the blood product.	1094
	3. The system SHALL provide the ability to capture the blood product number, amount, route and time of administration.	1095
	4. The system SHALL conform to function CP.3.2 (Manage Patient Clinical Measurements) and capture the blood pressure, temperature, pulse and respiration rate of the patient receiving the product.	1096
CPS.6.4 Function Support for Accurate Specimen Collection		1097

Statement: Facilitate real-time checks to ensure accurate specimen collection.

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Description: To ensure specimen collection accuracy, the patient and specimen are positively identified. The provider is notified in real-time of potential collection errors such as wrong patient, wrong specimen type, wrong means of collection, wrong site, and wrong date and time.	
	1. The system SHALL provide the ability to render information necessary to correctly identify the patient and accurately identify the specimen to be collected including, but not limited to, patient name, specimen type, specimen source, means of collection, date and time.	1098
	2. The system SHALL provide the ability to determine and render variations between the type of specimen order placed and actual specimen collected.	1099
	3. The system SHALL provide the ability to capture the details of specimen collection.	1100
	4. The system SHOULD render, at the time of specimen collection, information notifying the provider of a variation between the type of specimen order placed and the actual specimen collected.	1101
CPS.7 Header Support Future Care		1102
	Statement: Support for Future Care is necessary to enable the planning of future care according to appropriate healthcare guidelines. **Description:** Support for future care includes the provision of clinical decision support through giving access to healthcare guidelines from external sources.	
CPS.7.1 Function Access Healthcare Guidance		1103
	Statement: Provide pertinent information from available evidence-based knowledge, at the point of care, for use in healthcare decisions and care planning. **Description:** The information available regarding disease, disease processes, diagnostic testing, pharmaceuticals, treatment patterns and all aspects of healthcare is constantly changing. The practitioner should be able to access a wide variety of sources that provide relevant, accurate information about any given subject. Examples of resources include, but are not limited to evidence on treatment of specific medical conditions, maintenance of wellness, drug or device trials, context-specific information available through online journals, printed resources such as books and specialty organizations resources. For example, when a condition is diagnosed the provider might be directed to relevant resources that give updated clinical research, useful pharmaceutical combinations, surgical techniques, products or other information useful in the management of the specific condition under consideration.	
	1. The system SHALL provide the ability to render external evidence-based healthcare recommendations, including documentation of sources.	1104
	2. The system SHOULD provide the ability to render external evidenced-based documentation appropriate for the care provider to render a timely judgment.	1105
	3. The system SHOULD provide the ability to render external evidence-based documentation.	1106
	4. The system SHALL conform to function CPS.3.3 (Support for Standard Care Plans, Guidelines, Protocols).	1107
	5. The system SHOULD provide the ability to maintain initiation criteria for Clinical Practice Guidelines (CPGs).	1108
	6. The system SHOULD determine candidate patients based upon configured CPG initiation criteria.	1109
	7. The system SHOULD render identified patients applicable CPGs to the care giver.	1110
	8. The system SHOULD provide the ability to maintain knowledge bases or guidelines deployed in an enterprise.	1111
CPS.8 Header Support Patient Education & Communication		1112
	Statement: Support for appropriate communication with the patient or the patient representatives. **Description:** Support for patient education and communication is critical to ensure that the patient can appropriately participate in his care. This includes providing access to relevant patient educational materials and reminders from internal, and/or external sources.	
CPS.8.1 Function Patient Knowledge Access		1113
	Statement: Provide the ability to access reliable information about wellness, disease management, treatments, peer support groups, public health education materials, and related information that is relevant for a specific patient. **Description:** An individual will be able to find reliable information to research a health question, follow up from a clinical visit, identify treatment options, or other health information needs. The information may be linked directly from entries in the health record, or may be accessed through other means such as key word search. The information may be provided as part of the EHR system but may also include patient information from external databases or specific websites.	
	1. The system SHALL provide the ability to determine and render information about wellness, disease management, treatments, population level health measures and related information that is relevant for a specific patient.	1114
	2. The system SHOULD provide the ability to determine and render information related to a health question directly from data in the health record or other means such as key word search.	1115

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	3. The system MAY provide the ability to capture and render patient educational information from external sources.	1116
	4. The system MAY provide the ability to link to external-based wellness, disease management, peer support group and related information.	1117
CPS.8.2 Function Patient Education Material Updates		1118
Statement: Receive and validate formatted inbound communications to facilitate, and/or perform updating of patient education material. **Description:** Materials may include information about a diagnosis, recommended diets, associated patient health organizations, or web links to similar educational information. These materials may be provided electronically and may require validation prior to inclusion in the system.		
	1. The system MAY provide the ability to capture and update education material that may be provided to the patient at the point of care.	1119
	2. The system MAY provide the ability to render information that will allow validation of the patient education material prior to update.	1120
CPS.8.3 Function Patient Reminder Information Updates		1121
Statement: Receive and validate formatted inbound communications to facilitate updating of patient reminder information from external sources such as Cancer or Immunization Registries. **Description:** Information from outside groups, such as immunization groups, public health organizations, etc. may periodically send updates to patient care providers. The system should be capable of generating patient reminders based on the recommendations of these organizations. Patient reminders could be provided to patients by a number of means including phone calls, or mail. A record of such reminders may become part of a patient's record. Examples of reminders could include a recommended immunization, prophylactic guidelines for MVP, patient self-testing for disease, etc.		
	1. The system SHOULD provide the ability to capture, maintain and render patient reminders for all patients to whom the reminder applies, based on the recommendations of public health authorities or disease specific associations (e.g., new dietary recommendations for patients with diabetes - captured, maintained and rendered as a reminder for all patients with diabetes).	1122
	2. The system MAY determine and link patient reminders with patients meeting specific criteria (e.g., age, gender, diagnosis, phenotypic factors)	1123
	3. The system SHOULD provide the ability to render patient reminders.	1124
	4. The system MAY automatically determine and render patient reminders for mailing to patients.	1125
	5. The system SHOULD provide the ability to update disease management guidelines and any associated reference material.	1126
	6. The system SHOULD provide the ability to update preventative services/wellness guidelines and any associated reference material.	1127
CPS.8.4 Function Support for Communications Between Provider and Patient, and/or the Patient Representative		1128
Statement: Facilitate communications between providers and patients, and/or the patient representatives. **Description:** Providers are able to communicate with patients and others, capturing as specified by the business rules the nature and content of electronic communication, or the time and details of other communication.Examples: - When test results arrive, the clinician may wish to email the patient that test result was normal (details of this communication are captured).- A patient may wish to request a refill of medication by emailing the physician.- Patients with asthma may wish to communicate their peak flow logs/diaries to their provider.- Hospital may wish to communicate with selected patients about a new smoking cessation program.- Automated notification regarding annual flu shots		
	1. The system SHALL provide the ability to capture and store documentation of communications between providers and patients and/ or the patient representatives.	1129
	2. The system SHALL provide the ability to capture scanned documents.	1130
	3. The system SHOULD provide the ability to receive and transmit information between providers and patients or their representative using a secure internet connection.	1131
	4. The system SHALL provide the ability to manage authorizations documentation for family member or patient representative to receive patient related health information.	1132
	5. The system SHOULD render an alert to providers regarding the presence of communications that originated from the patient or patient representative.	1133
	6. The system SHOULD transmit a notification regarding the provider's unavailability (e.g., vacations) when the provider receives information or requests electronically based on user-defined configuration (e.g., email out-of-office notification).	1134

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	7. The system MAY determine alternate routing of information or requests recieved when the provider is unavailable based on user-defined configuration and transmit a notification of the routing. (e.g., alternate provider covering for vacation).	1135
	8. The system MAY provide the ability to render a notification of events and new treatment options to providers.	1136
	9. The system MAY provide the ability to transmit to the patient or patient representative reminders of events related to their care (e.g., upcoming appointments) as agreed upon by the patient, and/or the patient representative.	1137
	10. The system MAY provide the ability to capture and transmit information between providers and patient groups.	1138
	11. The system SHALL provide the ability to render notifications, manually, and/or automatically, to patients for conditions and results that require follow-up, according to scope of practice, organizational policy, and/or jurisdictional law, and to update the patient record with the fact that this was done.	1139
	12. The system SHALL provide the ability to render information (e.g., electronic, paper, CD-ROM) to patients and to update the patient record with the fact that this was done.	1140
	13. The system MAY provide the ability to notify the patient when specific medication doses are due, and/or when diagnostic/screening tests are due.	1141
	14. The system SHOULD provide the ability for the provider to capture an authorization for the transmittal of medication renewal data to an external system and transmittal of a notice to patient via preconfigured notification channel, one of which may be Consumer Health Solution or Personal Health Record, according to scope of practice, organizational policy, and/or jurisdictional law.	1142
CPS.8.5 Function Patient, Family and Care Giver Education		1143
Statement: Facilitate access to educational or support resources pertinent to, and usable by, the patient or patient representative. **Description:** The provider or patient is presented with a library of educational materials. Material may be made available in the language or dialect understood by the patient or representative. Material should be at the level of the patient or representative's level of understanding and sensory capability. Special needs are documented. Material may be disseminated via a mode available to and acceptable by the patient e.g., printed, electronically or otherwise. The review of material between the clinician and the patient, and the patient's understanding of the review, is documented when desired by the clinician. The patient or patient's representatives are able to obtain educational information independently without formal review with the clinician, if desired.		
	1. The system SHALL provide the ability to render educational material for medication, health concerns, conditions, and/or diagnoses.	1144
	2. The system SHALL provide the ability to render applicable educational materials to the patient, and/or patient representative (e.g., the patient receives information about risks associated with immunizations during pregnancy and the possible side effects of the flu vaccine).	1145
	3. The system SHALL provide the ability to render multilingual educational material.	1146
	4. The system SHOULD provide the ability to render patient educational materials using alternative modes to accommodate patient sensory capabilities.	1147
	5. The system MAY provide the ability to import, and/or receive external educational materials.	1148
	6. The system MAY provide the ability to determine the most pertinent educational material, based on patient-specific criteria (e.g., the patient's health status, condition or diagnosis).	1149
	7. The system SHOULD provide the ability to capture the identity of the person who received the educational material provided (e.g., the patient or the patient representative).	1150
	8. The system SHOULD provide the ability to capture a note to the effect that the educational material was reviewed with the patient, and/or patient representative and regarding their comprehension of the material.	1151
	9. The system SHOULD provide the ability to render educational materials written for various ages, and/or reading abilities.	1152
	10. The system SHOULD provide the ability to determine age-appropriate, and/or reading-ability appropriate educational materials for the patient, and/or patient representative.	1153
	11. The system MAY provide the ability to render educational material based on the direct choice made by patients, and/or patient representatives.	1154
CPS.8.6 Function Communication with Personal Health Record Systems		1155
Statement: Statement: Enable and manage communication between EHR Systems and PHR Systems. **Description:** With the increasing use of Personal Health Record systems, it is necessary for the EHR-S to appropriately communicate with the PHR to both capture patient information from the PHR and transmit relevant portions of the EHR patient record to the PHR to support patient self care.		

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	1. The system SHALL provide the ability to capture and maintain documentation of communications between providers/providers EHR-S and the PHR-S.	1156
	2. The system SHOULD provide the ability to capture communication originating from the PHR-S (e.g., date, person identification and details of communication).	1157
	3. The system SHALL provide the ability to capture 3rd party (e.g., family member, authorized representative) authorization documentation for the receipt of health information from the PHR-S.	1158
	4. The system SHOULD provide the ability to exchange communications between providers and PHR-S using a secure internet connection.	1159
	5. The system MAY provide the ability to receive clinical and administrative data (e.g., insurance information) as part of the referral process from a PHR-S.	1160
	6. The system SHOULD have the ability to transmit clinical, administrative data, test results and procedure results to a PHR-S based on authorization documentation and according to scope of practice, organizational policy, and/or jurisdictional law.	1161
CPS.9 Header Support Care Coordination & Reporting		1162

Statement: Support exchange and reporting of information between participants in patient-centered care.

Description: Provide the support necessary to ensure that appropriate communication between providers is possible to coordinate the patient's care including, clinical communication between providers, standard and ad-hoc reporting and information views of the patient record.

CPS.9.1 Function Clinical Communication Management and Support		1163

Statement: Support exchange of information between participants in patient-centered care as needed, and the appropriate documentation of such exchanges. Support secure communication to protect the privacy of information as required by jurisdictional law.

Description: Healthcare requires secure communications among various participant in the patient's circle of care: patients, doctors, nurses, chronic disease care managers, public health authorities, pharmacies, laboratories, payers, consultants etc. An effective EHRS supports communication across all relevant participants, reduces the overhead and costs of healthcare-related communications, and provides automatic tracking and reporting. The list of communication participants is determined by the care setting and may change over time.Because of concerns about scalability of the specification over time, communication participants for all care settings or across care settings are not enumerated here because it would limit the possibilities available to each care setting and implementation. However, communication between providers and between patients and providers will be supported in all appropriate care settings and across care settings. Implementation of the EHRS enables new and more effective channels of communication, significantly improving efficiency and patient care. The communication functions of the EHRS changes the way participants collaborate and distribute the work of patient care.

	1. The system SHOULD provide the ability to receive and transmit secure real-time messaging either automatically or manually.	1164
	2. The system MAY provide the ability to render workflow tasks as part of communication to the provider.	1165
	3. The system SHOULD have the ability to present an indication that a secure standards-based message has been transmitted or received, and present that message in human readable form.	1166
	4. The system SHOULD have the ability to transmit a notification to the user when a message has been received from an external source.	1167
CPS.9.2 Function Support for Inter-Provider Communication		1168

Statement: Support exchange of information between providers as part of the patient care process, and the appropriate documentation of such exchanges. Support secure communication to protect the privacy of information as required by jurisdictional law.

Description: Communication among providers involved in the care process can range from real time communication (for example, communication between a therapist and nurse), to asynchronous communication (e.g., consult reports between physicians). Some forms of inter-practitioner communication will be paper based and the EHR-S must be able to produce appropriate documents.The system should provide for both verbal and written communication. These exchanges would include but not be limited to consults, and referrals as well as possible exchanges within the office as part of the provision and administration of patient care (e.g., the communication of new information obtained within the office environment during the process of administration of a tetanus shot while the patient is in the exam room).The system should support the creation and acceptance of paper artifacts where appropriate.

	1. The system SHALL provide the ability to capture and store in the patient record verbal/telephone communication (including verbal orders) between providers including the identification of these providers.	1169
	2. The system SHALL provide the ability to integrate scanned documents from providers into the patient record.	1170
	3. The system SHOULD provide the ability to receive and transmit messages or information in real time.	1171
	4. The system SHOULD provide the ability to receive and transmit clinical information (e.g., referrals) via secure e-mail or other secure standard electronic means.	1172

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	5. The system SHALL provide the ability to transmit (e.g., via e-mail) specific patient data (e.g.reports, results, documents) to alternate providers/facilities in an emergency care context.	1173
	6. The system SHOULD provide the ability to transmit specific patient diagnostic quality images (e.g., sound, EKG waveform, EKG graph, video, diagnostic imaging) to alternate providers/facilities in an emergency care context.	1174
	7. The system SHOULD provide the ability to receive and transmit in a secure manner electronic multi-media data types representing pictures, sound clips, or video as part of the patient record.	1175
	8. The system SHOULD provide the ability for the user to render patient status (e.g., arrival, admission, discharge, death) notification to providers and care managers (e.g., the Emergency Department physician sends a notification to members of the care team that the patient has been admitted).	1176
	9. The system SHOULD provide the ability to render patient status (e.g., arrival, admission, discharge, death) notification to providers and care manager, based on clinical rules (e.g., a rules-engine automatically sends an notification to all members of the care team that the patient has arrived at the hospital).	1177
	10. The system MAY provide the ability for the user to render patient care plans/instructions to providers and care managers when a patient's status has changed.	1178
	11. The system MAY provide the ability to render patient care plans/instructions to providers and care managers based on clinical rules when a patient's status has changed.	1179
	12. The system MAY provide the ability to render an alert to an originating external provider who has submitted information or a request, about the target internal provider's unavailability (e.g., vacations) and recommend rerouting of the information or request.	1180
	13. The system SHOULD provide the ability to render an alert the originating internal provider who has submitted information or a request, about the target internal provider's unavailability (e.g., vacations) and recommend rerouting of the information or request.	1181
CPS.9.2.1 Function Manage Consultation Requests and Responses		1182

Statement: Provide a means to capture and manage requests for consultation and responses.

Description: EHR system should support the ability to document and note calls made to physician/provider consultants, as well as their responses. This includes the time of the initial and any subsequent pages or calls, the time and method whereby the consultant responded, as well as the final disposition of the consultation.

	1. The system SHALL provide the ability to capture and maintain records of consultations by providers other than the attending provider.	1183
	2. The system MAY provide the ability to capture time notified (e.g., paged), time responded, and time arrived, as well as final disposition and recommendation of consultations.	1184
	3. The system SHOULD capture the details of the request for consultation and its responses as discrete data, including timestamps, sufficient for reporting.	1185
	4. The system MAY provide the ability to transmit from within the application, signals for electronic paging and dialing.	1186
	5. The system SHOULD have the ability to present data on pending consultations.	1187
	6. The system MAY render to the referring provider a notification of the completion of consultations.	1188
	7. The system MAY present estimated time of arrival of consultants.	1189
CPS.9.2.2 Function Support for Provider to Professional Communication		1190

Statement: Manage communications to professionals (e.g., coroners, medical examiners, law enforcement) for health care events.

Description: Health care providers must be able to provide notifications and associated administrative, and/or clinical information to various professional individuals or organizations of specific health care events (e.g., patient deaths, births, gunshot wounds) in order to promote or trigger a workflow.

	1. The system SHOULD provide the ability to determine, tag and present healthcare event records for notification to appropriate personnel or systems (e.g., events requiring notification to medical examiner, coroner, funeral director, law enforcement, vital records organizations), according to scope of practice, organizational policy, and/or jurisdictional law.	1191
	2. The system MAY provide the ability to capture and store an indicator of death/fetal death notification to appropriate personnel or systems (e.g., medical examiner, coroner, funeral director, law enforcement, vital records organizations) including the date and time of the notification event, according to scope of practice, organizational policy, and/or jurisdictional law.	1192
	3. The system MAY provide the ability to capture and store an indicator of birth notification to appropriate personnel or systems (e.g., general practitioner, vital records organization) including the date and time of the notification event, according to scope of practice, organizational policy, and/or jurisdictional law.	1193

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	4. The system MAY provide the ability to capture and render clinical details regarding birth, death and fetal death events to appropriate personnel or systems according to scope of practice, organizational policy, and/or jurisdictional law.	1194
	5. The system MAY provide the ability to capture and render administrative details regarding birth, death and fetal death events to appropriate personnel or systems according to scope of practice, organizational policy, and/or jurisdictional law.	1195
CPS.9.2.3 Function Support for Provider -Pharmacy Communication		1196

Statement: Provide features to enable secure bi-directional communication of information electronically between practitioners and pharmacies or between practitioner and intended recipient of pharmacy orders.

Description: When a medication is prescribed, the order is routed to the pharmacy or other intended recipient of pharmacy orders. This information is used to avoid transcription errors and facilitate detection of potential adverse reactions. If there is a question from the pharmacy, that communication can be presented to the provider with their other tasks. In certain environments, medication order creation is a collaborative process involving the prescriber and facility staff. Accordingly, this function applies to communication process between the prescriber, facility and the pharmacy or other intended recipient of pharmacy orders. The transmission of prescription data between systems should conform to realm acceptable messaging standards. Informative examples:- HL7 Clinical Document

Architecture Release 2- ISO/EN 13606 Electronic Health Record Communication- CEN ENV 13607:2000. Health informatics. Messages for the exchange of information on medicine prescriptions- X12N healthcare transactions- US realm: National Council for Prescription Drug Programs (NCPDP)- Canadian realm: National Electronic Claims Standard (NeCST)

	1. The system SHALL conform to function CP.4.2 (Manage Medication Orders) and provide the ability to transmit medication orders.	1197
	2. The system SHALL provide the prescriber/provider with the ability to electronically transmit orders, prescriptions, eligibility inquiries, acknowledgements and renewal responses to the pharmacy, as necessary, to initiate, change, or renew a medication order.	1198
	3. The system SHALL provide the ability to receive any acknowledgements, prior authorizations, renewals, inquiries and fill notifications provided by the pharmacy or other participants in the electronic prescription process.	1199
	4. The system SHOULD provide the ability to exchange clinical information with pharmacies using current realm-specific messaging or services standards.	1200
	5. The system MAY provide the ability for providers and pharmacies to receive and transmit clinical information via secure e-mail or other electronic means, on both general and specific orders.	1201
	6. The system SHALL provide the ability to receive and transmit secure real-time messages or services.	1202
	7. The system MAY provide the ability to transmit information on workflow tasks as part of communication to the provider.	1203
	8. The system SHOULD provide the ability to transmit a request to the pharmacy (based on an existing order) that additional medication be delivered (i.e. re-supply request).	1204
	9. The system SHOULD have the ability to receive and transmit drug utilization review (DUR) findings and formulary & benefits (F&B) data with the pharmacy using standards-based messaging.	1205
	10. The system SHOULD provide the ability to capture authorization for transmittal of medication renewal data to an external system and transmittal of a notice to patient via preconfigured notification channel (e.g., Consumer Health Solution or Personal Health Record), according to scope of practice, organizational policy, and/or jurisdictional law.	1206
CPS.9.3 Function Health Record Output		1207

Statement: Support the definition of the formal health record, a partial record for referral purposes, or sets of records for other necessary disclosure purposes.

Description: Provide hardcopy and electronic output that fully chronicles the healthcare process, supports selection of specific sections of the health record, and allows healthcare organizations to define the report, and/or documents that will comprise the formal health record for disclosure purposes. A mechanism should be provided for both chronological and specified record element output. This may include defined reporting groups (i.e. print sets). For example Print Set A = Patient Demographics, History & Physical, Consultation Reports, and Discharge Summaries. Print Set B = all information created by one caregiver. Print Set C = all information from a specified encounter. An auditable record of these requests and associated exports may be maintained by the system. This record could be implemented in any way that would allow the who, what, why and when of a request and export to be recoverable for review. The system has the capability of providing a report or accounting of disclosures by patient that meets in accordance with scope of practice, organizational policy, and jurisdictional law.

	1. The system SHALL provide the ability to render reports consisting of all and part of an individual patient's record according to scope of practice, organizational policy, and/or jurisdictional law.	1208
	2. The system SHOULD provide the ability to capture and maintain the records or reports that are considered the formal health record for disclosure purposes.	1209
	3. The system SHOULD provide the ability to render reports in both chronological and specified record elements order.	1210

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	4. The system SHOULD provide the ability to maintain and render hardcopy and electronic report summary information (e.g., demographics, procedures, medications, labs, immunizations, allergies, vital signs).	1211
	5. The system MAY provide the ability to capture and maintain reporting groups (i.e., print sets) for specific types of disclosure or information sharing.	1212
	6. The system SHALL provide the ability to render patient identifying information on each page of reports (i.e., hard copy and electronic) according to organizational policy, and/or jurisdictional law.	1213
	7. The system SHOULD provide the ability to update reports to match mandated formats.	1214
	8. The system MAY provide the ability to render a report that includes metadata for disclosure purposes (e.g., point of record exchange).	1215
	9. The system SHALL provide the ability to manage-data-visibility [hide or redact] (remove from view, and/or output) data elements or portions of a report to prevent a given recipient from seeing certain data according to organizational policy, and/or jurisdictional law.	1216
	10. The system SHOULD provide the ability to capture and render [cite] the reasons for redaction.	1217
	11. The system MAY provide the ability to render [reproduce] a copy of the redacted document/record (e.g., through rules, storing a copy).	1218
	12. The system MAY provide the ability to render patient care events sorted or configured by date and time ranges and data/record type.	1219
	13. The system MAY provide the ability to maintain a record of disclosure/release that includes the recipient and outbound content.	1220
	14. The system SHOULD provide the ability to render wrist bands that include appropriate demographic and clinical information.	1221
	15. The system SHOULD provide the ability to render a record summary using the format specified by an organization to which a patient is transferred.	1222
CPS.9.4 Function Standard Report Generation		1223

Statement: Provide report generation features using tools internal or external to the system, for the generation of standard reports.

Description: Providers and administrators need access to data in the EHR-S for clinical, administrative, financial decision-making, audit trail and metadata reporting, as well as to create reports for patients. Many systems may use internal or external reporting tools to accomplish this. Reports may be based on structured data, and/or unstructured text from the patient's health record.Users need to be able to sort, and/or filter reports. For example:-the user may wish to view only the diabetic patients on a report listing patients and diagnoses-the user may wish to view only male patients over 35 with a complaint of chest pain.

	1. The system SHOULD provide the ability to render reports of structured clinical and administrative data using either internal or external reporting tools.	1224
	2. The system MAY provide the ability to extract unstructured clinical and administrative data for inclusion in the report generation process, using internal or external tools.	1225
	3. The system SHOULD provide the ability to extract and transmit reports generated.	1226
	4. The system SHOULD provide the ability to capture and maintain report parameters, based on patient demographic, and/or clinical data, which would allow sorting, and/or filtering of the data.	1227
	5. The system MAY provide the ability to save report parameters for generating subsequent reports either as integrated component of the system, or an external application, using data from the system.	1228
	6. The system MAY provide the ability to edit one or more parameters of a saved report specification when generating a report using that specification either as an integrated component of the system, or an external application, using data from the system.	1229
	7. The system SHOULD provide the ability to render automated reports as required by industry and regulatory bodies.	1230
	8. The system SHOULD provide the ability to extract facility level data at an organizational level in support of organizational initiatives.	1231
	9. The system MAY provide the ability to render a cumulative directory of all personnel who use or access the data.	1232
CPS.9.5 Function Ad Hoc Query and Rendering		1233

Statement: Provide support for ad hoc query and report generation using tools internal or external to the system. Present customized views and summarized information from a patient's comprehensive EHR subject to jurisdictional laws and organizational policies related to privacy and confidentiality. The view may be arranged chronologically, by problem, or other parameters, and may be filtered or sorted.

Description: Providers and administrators need to respond quickly to new requirements for data measurement and analysis. This may be as a result of new regulatory requirements or internal requirements. This requires that users be able to define their own query parameters and retain them. The data may be found in both structured and unstructured data. Providers and administrators also need to query for the absence of specific clinical or administrative data. For example, the Quality Control department may be reviewing whether or not the protocol for management of Diabetes Mellitus is being followed. If the protocol calls for fasting blood sugars every 3 months at minimum, the investigator might need to run an across-patient query locating patients with diabetes who do not show an FBS result within the last 3 months. Emergency Department benchmarking reports - Key point of time include arrival time; treatment area entrance time, MD contact time; decision to admit, discharge or transfer time; and departure (left ED) time. Important intervals include, but are not limited to the

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	"door to doctor time", "doctor to diction time", "admission to bed availability or departure" as well as overall length of stayA key feature of an electronic health record is its ability to support the delivery of care by enabling prior information to be found and meaningfully displayed. EHR systems should facilitate search, filtering (e.g., filtering by key word, tagged data, or diagnosis), summarization, and presentation of available data needed for patient care. Systems should enable views to be customized, for example, specific data may be organized chronologically, by clinical category, by consultant, depending on need. The views may be arranged chronologically, by problem, or other parameters, and may be filtered or sorted. Jurisdictional laws and organizational policies that prohibit certain users from accessing certain patient information must be supported.	
	1. The system SHOULD provide the ability to render ad hoc query and reports of structured clinical and administrative data through either internal or external reporting tools.	1234
	2. The system MAY provide the ability to capture and render information extracted from unstructured clinical and administrative data in the report generation process, using internal or external tools.	1235
	3. The system SHOULD provide the ability to extract and transmit reports generated.	1236
	4. The system SHOULD provide the ability to capture and maintain report parameters, based on patient demographic, and/or clinical data, which would allow sorting, and/or filtering of the data.	1237
	5. The system MAY provide the ability to save report parameters for generating subsequent reports.	1238
	6. The system MAY provide the ability to edit one or more parameters of a saved report specification when generating a report using that specification.	1239
	7. The system MAY provide the ability to render reports, using internal or external reporting tools, based on the absence of a clinical data element (e.g., a laboratory test has not been performed in the last year).	1240
	8. The system MAY provide the ability for the patient to render [query] the financial data and the data about his or her health related accounts.	1241
	9. The system SHOULD provide the ability to present and transmit customized views of summarized information based on sort and filter controls for date or date range, problem, or other clinical parameters.	1242
	10. The system SHOULD provide the ability to present and transmit summarized information through customized views based on prioritization of chronology, problem, or other pertinent clinical parameters.	1243
	11. The system SHALL support the ability for a provider to capture and maintain filters to search for previous events (e.g., encounters, reports, consults) meeting specified criteria.	1244
CPS.9.6 Function Information View		1245
	Statement: Support user-defined information views. **Description:** Views of the information can be tailored for or by the user (or department or "job classification") for their presentation preferences, within local or facility established rules. For example, a nursing supervisor may elect or prefer to see summary data on all patients as the default view.	
	1. The system MAY provide administrators the ability to capture preferences (e.g., by user, role or context) for rendering information.	1246
	2. The system MAY provide the ability to capture a user's preference for rendering information.	1247
	3. The system MAY manage role-based data-capture-options.	1248
	4. The system MAY manage role-based data-rendering-options.	1249
	5. The system MAY provide authorized users the ability to tailor their presentation of information according to personal preferences, and/or organizational policy.	1250
CPS.10 Function Manage User Help		1251
	Statement: Support the ability to manage the configuration, and/or customization of appropriate user help that is context sensitive and may include the exchange of live online chat. **Description:** Throughout the system it is necessary to provide configurable, context sensitive, and/or searchable user help to assist in the use of the system. User help levels should be configurable based on user requirements, scope of practice, organizational policy, and/or jurisdictional law. User Help may include the live online chat support.	
	1. The system SHOULD provide the ability to manage the configuration and customization of User Help in accordance with user requirements, and according to scope of practice, organizational policy, and/or jurisdictional law.	1252
	2. The system SHOULD receive queries and render responses for data entry and system navigation assistance (User Help).	1253
	3. The system MAY exchange User Help queries and responses via live online chat.	1254
	4. The system SHOULD render context-sensitive invokable help to guide users through activities in the system (e.g., charting steps, menu navigation).	1255

4. Administration Support Section

Section Overview

The Administrative Support Section focusses on functions required in the EHR-S to support the management of the clinical practice and to assist with the administrative and financial operations. This includes management of resources, workflow and communication with patients and providers as well as the management of non-clinical administrative information on patients and providers. All functions within the Administrative Support Section have an identifier starting with “AS”.

Section/Id#: Type: Name:	Conformance Criteria	Row#
AS.1 Header Manage Provider Information		1388
Statement: Maintain, or provide access to, current provider information. **Description:** Manage the information regarding providers within and external to an organization that is required to support care provision. This information includes a registry of providers (internal to the EHR-S or external), the provider's location, on-call information, and office information. Information regarding teams or groups of providers as well as individual patient relationships with providers is necessary to support care coordination and access to patient information.		
AS.1.1 Function Manage Provider Registry or Directory		1389
Statement: Provide a current registry or directory of practitioners that contains data needed to determine levels of access required by the system. **Description:** Provider information may include any credentials, certifications, or any other information that may be used to verify that a practitioner is permitted to use or access authorized data.		
	1. The system SHOULD provide the ability to manage a registry or directory of all personnel who currently use or access the system according to scope of practice, organizational policy, and/or jurisdictional law.	1390
	2. The system SHOULD provide the ability to capture and maintain realm-specific legal identifiers required for care delivery (e.g., the provider's license number or national provider identifier).	1391
	3. The system SHALL provide the ability to capture and maintain the role of each provider associated with a patient (e.g., encounter provider, primary care provider, attending, resident, or consultant).	1392
	4. The system SHOULD link provider information in the registry or directory with the security function to determine or identify authorized levels of access.	1393
	5. The system MAY provide the ability to manage a directory of clinical/support personnel external to the organization that are not users of the system (to facilitate documentation and information communication).	1394
	6. The system SHOULD provide the ability to update the provider's access to the requested patient's information when a patient-provider relationship is established in the system (e.g., when patient is cared for in Emergency, system enables emergency attending provider to access patient's information); according to scope of practice, organizational policy, and/or jurisdictional law.	1395
	7. IF TI.3 (Registry and Directory Services) is implemented, THEN the system SHALL conform to function TI.3 and provide the ability to use registries or directories to uniquely identify providers for the provision of care.	1396
	8. The system SHOULD provide the ability for authorized users to restrict the view of selected elements of the registry or directory information for the users of the system based on the user's security level and access needs.	1397
	9. The system MAY provide the ability to maintain a registry or directory which identifies the provider by multiple unique identifiers.	1398
AS.1.2 Function Manage Provider's Location Within Facility		1399
Statement: Provide provider location or contact information on a facility's premises. **Description:** The identification of provider’s location within a facility may facilitate the handling of critical care situations. This may include the location of on site practitioners by name or immediate required specialty. A real-time tracking system may provide automatic update of such information.		
	1. The system SHOULD provide the ability to manage information on a provider's location, and/or contact information when the provider is on a facility's premises.	1400
	2. The system MAY provide the ability to manage a provider's scheduled visits to a given facility.	1401
AS.1.3 Function Provider's On Call Location		1402

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Statement: Provide provider location or contact information when on call. **Description:** The provider immediate contact information. This may include on call practitioners on a facility's premises as well as on call contact information (e.g., phone number, pager, cell phone, etc.) after scheduled working hours.	
	1. The system SHOULD provide the ability to manage information on a provider's location, and/or contact information when the provider's is "on call".	1403
AS.1.4 Function Manage Provider's Location(s) or Office(s)		1404
	Statement: Provide locations or facility contact information for the provider in order to direct patients or queries. **Description:** Providers may have multiple locations or offices where they practice. The system should maintain information on the primary location, any secondary locations, as well as the scheduled hours at each location. Information maintained may include web sites, maps, office locations, etc.	
	1. The system SHOULD manage information necessary to identify primary and secondary practice locations or offices of providers.	1405
	2. The system SHOULD contain the information on times of service availability at primary and secondary locations or offices of providers.	1406
AS.1.5 Function Team/Group of Providers Registry or Directory		1407
	Statement: Provide access to a current directory, registry or repository of information on teams or groups of providers according to scope of practice, organizational policy, and/or jurisdictional law. **Description:** An organization may assign caregivers to teams that need to be registered as such. In another scenario, an organization might contract with a group of providers. The group would be listed by the group name or individually or both. A caregiver might be part of more than one team or group. All of these factors need to be supported. Information includes, but is not limited to: full name, address or physical location, and a 24x7 telecommunications address (e.g., a phone or pager access number).	
	1. The system SHOULD provide the ability to render a current directory, registry or repository of teams or groups of providers according to scope of practice, organizational policy, and/or jurisdictional law.	1408
	2. The system SHOULD provide the ability for authorized users to manage the assignment of providers to appropriate teams or groups of providers according to scope of practice, organizational policy, and/or jurisdictional law.	1409
	3. The system MAY provide the ability to determine the identity of a provider's employer(s) for administrative or financial purposes through the use of internal, and/or external registry services or directories.	1410
	4. The system SHALL provide the ability to tag the role of each provider associated with a patient (e.g., encounter provider, primary care provider, attending, resident, or consultant)	1411
	5. The system SHOULD provide the ability to manage care team membership.	1412
	6. The system SHOULD provide the ability to manage demographic and scheduling information on care team members, according to scope of practice, organizational policy, and/or jurisdictional law.	1413
AS.1.6 Function Provider Caseload/Panel		1414
	Statement: Provide access to a provider's caseload or panel information. **Description:** An organization might employ the concept of caseload or panel of patients to facilitate continuity of care and distribution of work. A caregiver may have, or be accountable for, one or more defined caseloads or panels of members/patient/clients within the organization. Information about a caseload or panel may include an indication that an opening is available on a certain caseload or an indication that a certain patient is not suitable for that caseload. A member/patient may be provided access to a listing of caregivers with open caseloads or panels to select a provider.	
	1. The system SHALL provide the ability to manage a provider's caseload or panel information according to scope of practice, organizational policy, and/or jurisdictional law.	1415
	2. The system SHOULD conform to function AS.1.7 (Manage Practitioner/Patient Relationships).	1416
AS.1.7 Function Manage Practitioner/Patient Relationships		1417
	Statement: Identify relationships among providers treating a single patient, and provide the ability to manage patient lists assigned to a particular provider. **Description:** This function addresses the ability to manage current information about the relationships between providers and the patients. This information should be able to flow seamlessly between the different components of the system, and between the EHR system and other systems. Business rules may be reflected in the presentation of, and the access to this information. The relationship among providers treating a single patient will include any necessary chain of authority/responsibility.Example: -In a care setting with multiple providers, where the patient can only see certain kinds of providers (or an individual provider); allow the selection of only the	

Section/Id#: Type: Name:	Conformance Criteria	Row#
	appropriate providers.-The user is presented with a list of people assigned to a given practitioner and may alter the assignment as required to a group, to another individual or by sharing the assignment.	
	1. The system SHALL provide the ability to extract the information needed to identify all providers by name associated with a specific patient encounter.	1418
	2. The system SHALL provide the ability to tag the role of each provider associated with a patient (e.g., encounter provider, primary care provider, attending, resident, or consultant).	1419
	3. The system MAY provide the ability to tag the role of each provider associated with a patient using structured data.	1420
	4. The system SHALL provide the ability to identify providers who have been associated with any encounter for a specific patient (i.e., all the providers who have had any encounter with the patient over time).	1421
	5. The system SHOULD provide the ability to capture and maintain, as discrete data elements, the identity of providers who have been associated with a specific patient encounter.	1422
	6. The system SHOULD provide authorized users the ability to capture and maintain information on the relationship of provider to patient.	1423
	7. The system SHOULD provide the ability to render patient lists by provider.	1424
	8. The system SHALL provide the ability to tag primary or principal provider(s) responsible for the care of a patient within a care setting.	1425
	9. The system SHOULD provide the ability to capture and maintain, as structured data elements, the principal provider responsible for the care of an individual patient.	1426
AS.1.8 Function Support for Provider Credentialing		
	Statement: Manage Provider Credentialing Information **Description:** Maintaining credentials, certifications, and other information is relevant for records management and evidentiary support because it establishes users and clinical personnel who are involved in patient care/encounter and supports the access control process.	
	1. The system SHALL provide the ability to capture and render information on clinician credentialing and privileging requirements, as defined by the applicable professional and governing organizations, according to scope of practice, organizational policy, and/or jurisdictional law.	1349
	2. The system SHALL provide the ability to capture and render the credentialing and privileging status for all members of the care team, including those participating remotely (e.g., via tele-health activities such as tele-consultation, home health monitoring) as defined by the applicable professional and governing organizations, according to scope of practice, organizational policy, and/or jurisdictional law.	1350
AS.2 Function Manage Patient Demographics, Location and Synchronization		1427
	Statement: Capture and management of patient administrative information across locations in order to support care, including directories, and/or registries. **Description:** A patient directory/registry may contain information including, but not limited to: full name, residence or physical location, alternate contact person, primary phone number, and relevant health status information. Various views of Patient Registry or Directory information may constructed to accommodate various user's needs. Examples of specific directory views are presented in the following functions.The patient administrative information also includes patient location information (within a facility as well as home care location(s)); as well as the patient's registration in healthcare programs.	
	1. The system MAY provide the ability to harmonize a patient's demographic information with an external system (e.g., a centralized registry or health information exchange) triggered by clinical or administrative events (e.g., arrival of a new patient, reappearance of a past patient at a given facility, or periodic synchronization of health information).	1428
	2. The system SHOULD provide the ability to transmit a notification to an external system (e.g., an external Client Registry or a Personal Health Record System) that a patient's demographic information was modified.	1429
	3. The system SHOULD provide the ability to tag patient information with the current status (e.g., active, admitted, inactive, or discharged).	1430
	4. The system SHOULD provide the ability to manage the administrative status and location of the patient during care within a facility. (e.g., waiting to see a provider, admitted, holding, waiting for nurse, waiting for consultant, or on the way to the Operating Room).	1431
AS.2.1 Function Synchronize Patient Demographic Data		1432
	Statement: Support interactions with other systems, applications, and modules to enable the maintenance of updated demographic information in accordance with realm-specific recordkeeping requirements.	

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Description: The minimum demographic data set must include the data required by realm-specific laws governing health care transactions and reporting. For example, this may include data input of death status information, or may include support to identify multiple names, such as updating from Baby Girl Doe, to neonate's given name.	
	1. The system SHALL provide the ability to capture and harmonize patient demographic information through interaction with other systems, applications, and modules according to scope of practice, organizational policy, and/or jurisdictional law.	1433
	2. The system SHOULD provide the ability to capture and harmonize information regarding a patient's occupation.	1434
	3. The system MAY provide the ability to capture and harmonize a patient's special-interest requirements (e.g., divers, firefighters, or airline pilots whose abilities to perform their occupations may be impacted based on a given diagnosis, and/or treatment).	1435
	4. The system SHOULD tag a patient who has similar names in other systems (e.g., aliases, similar names to family members for common issues, multiple patients with same name, one patient with multiple names in external systems).	1436
	5. The system SHOULD provide ability to capture a patient's information from multiple internal or external systems and harmonize the information.	1437
	6. The system MAY provide the ability to analyze the data quality of a patient's information (e.g., vital records information regarding the higher data quality of the date-and-time-of-death on one record, versus the lower data quality of the month-of-death on another record).	1438
	7. The system MAY provide the ability to capture data-validation rules for patient demographic data according to scope of practice, organizational policy, and/or jurisdictional law (e.g., synchronization of a patient's records where the values for the patient's sex are Male="1" in one record, and Male="m" in another record, can only be accomplished if the data-validation rules for those values in each record are known).	1439
AS.2.2 Function Manage Patient's Location Within Facility		1440
	Statement: Provide the patient's location information within a facility's premises. **Description:** It is important to maintain, and/or provide access to information regarding the patient's location within a facility during an episode of care. This information can be as simple as the identification of the patient's bed assignment (e.g., John Doe1, Bed 3, Ward 2). It is also important to provide real-time information regarding the patient's location since they may receive ancillary services in multiple parts of the facility (e.g., in the physical therapy or diagnostic imaging departments). Note: The patient's location within a facility may also be revealed by viewing standard reports (such as an Emergency Department Log). The system should support viewing a patient's specific location in terms that may include campus, building, wing, unit, room, and/or bed. The system should support jurisdictional laws related to the patient's ability (or desire) to consent to disclose their location within a facility (e.g., it may be unlawful to require a minor child to sign a consent form regarding their location in a facility). The patient's location information within the facility should also be available even before the patient is ascribed to a specific provider within that facility. As such, the system may need to provide a query feature regarding the patient's location information. The system may also support the identification of the patient by alternate identifying names (e.g., John Doe1 or "J. Doe1"). For example, the patient's physical therapist may be permitted to view an elderly patient's location within a long term care facility, but the patient's pharmacist may be restricted from viewing that information.	
	1. The system SHALL provide the ability to render information regarding the patient's assigned location when the patient has an assigned location (e.g., specific bed).	1441
	2. The system SHOULD provide the ability to render information regarding a patient's location based on existing patient-consent documentation and according to scope of practice, organizational policy, and/or jurisdictional laws.	1442
	3. The system MAY provide the ability to manage information regarding the patient's current location (e.g., temporary location of patient).	1443
	5. The system MAY provide the ability to render information regarding the patient's current location by alternate identifiers (e.g., by arrival number, by alias, or by bed-number).	1445
	6. The system MAY render the de-identified list of patients who have not consented to release of information.	1446
	7. The system SHOULD provide the ability to render an alert if the patient has exceeded a system-defined time in a location.	1447
AS.2.3 Function Manage Patient's Residence for the Provision and Administration of Services		1448
	Statement: Provide the patient's residence information for the provision and administration of services to the patient, patient transport, and as required for public health reporting. **Description:** This function is intended to support the provision of services to patients at their place of residence. Examples include but are not limited to the following:-Visiting nurse may be providing care to a new mother and baby at their place of residence.-A patient with a mobility problem may require transport to and from a clinic appointment.-Support identification of multiple residences for a patient like a child with multiple guardians (divorced parents with joint custody) or adults with Winter/Summer residences.	

Section/Id#: Type: Name:	Conformance Criteria	Row#
	1. The system SHOULD provide the ability to manage the patient's primary residence or place of habitation (e.g., home address or homeless shelter).	1449
	2. The system SHOULD provide the ability to manage the patient's secondary or alternate residence.	1450
	3. The system MAY provide the ability to manage patient information related to the provision of service (e.g., ambulance transport or home health care services).	1451
	4. The system SHOULD provide the ability to manage patient information related to transport, such as, mobility status and special needs. (e.g., wheelchair, walker)	1452
	5. The system SHOULD provide the ability to manage facility information related to patient mobility status and special needs (e.g., stairs, elevator, wheelchair access).	1453
	6. The system SHOULD provide the ability to manage public health reporting related patient residence information.	1454
AS.2.4 Function Manage Patient Bed Assignment		1455

Statement: Support interactions with other systems, applications, and modules to ensure that the patient's bed assignments within the facility optimize care and minimize risks e.g., of exposure to contagious patients.

Description: Access to a list of available beds is important to safely manage the care of patients whose bed requirements may change based on change in condition or risk factors. For example, a patient may need a room with special equipment or to be close to the nursing station or to be in a private room.

	1. The system SHOULD provide the ability to manage patient bed assignment interactions that are internal or external to the system (e.g., including temporary bed assignments).	1456
	2. The system MAY transmit patient information to an external system that will facilitate bed assignment, care optimization and risk mitigation.	1457
	3. The system SHOULD provide the ability to render lists of information to help enable effective bed assignment, including at a minimum, list of patients currently within the facility, a list of empty rooms and a list of available patient care spaces.	1458
	4. The system SHOULD provide the ability to render lists of information on patient status to help enable effective bed assignment, including at a minimum, a list of patients waiting to be triaged, a list of patients waiting to be registered, and a list of patients that have been admitted to the facility but are queued up for a transition of care.	1459
	5. The system MAY provide the ability to render waiting time for patients not yet brought to a treatment area.	1460
	6. The system MAY provide the ability to render the number of patients that have been admitted to the facility but are queued up for a transition of care.	1461
	7. The system MAY provide the ability to render information on incoming transported patients (e.g., rescue in-bounds).	1462
	8. The system MAY provide the ability to manage re-location of patients.	1463
	9. The system SHALL provide the ability to separately manage multiple patients being simultaneously cared for in a single room or identified space according to scope of practice, organizational policy, and/or jurisdictional law.	1464
	10. The system MAY provide the ability to manage temporary beds and the patients in the temporary beds according to scope of practice, organizational policy, and/or jurisdictional law.	1465
	11. The system MAY tag with a status indication that the patient is ready for a transition of care (e.g., transport to an inpatient bed).	1466
AS.2.5 Function Manage Patients in Healthcare Programs		1467

Statement: Capture and manage patient participation in healthcare programs.

Description: The system can provide the ability to identify patients participating in health care programs and to also manage information about those programs. The system can also support managing an organization's defined healthcare programs. These directories may include population based programs like an accountable care organization or patient-centered medical homes or patient panels. (NOTE: These program may include a roster-based funding component tied to patients in the programs.)

	1. The system SHOULD provide the ability to capture information about patient subscribed or registered into health care programs (e.g., clinical trials or wellness programs).	1468
	2. The system SHOULD provide the ability to manage information about health care programs (e.g., clinical trials or wellness programs) into which the patient has been subscribed or registered.	1469
	3. The system SHOULD provide the ability to manage separate status options for multiple healthcare program.	1470
AS.2.6 Function Manage Patient Privacy Consent Directives		1471

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Statement: Provide the ability to record and manage patient-specific privacy consent directive consistent with privacy policies. **Description:** The system enables the management of information access to support privacy policies. These policies allow patients to stipulate specific privacy preferences as a privacy consent directive. The consent may be issued for a specific disclosure, for a period of time, or until it is explicitly revoked. This function depends on infrastructure to enforce the privacy consent and any associated privacy policies using a combination of access control, secure messaging, secure data routing, and data segmentation.	
	1. The system SHOULD provide the ability to manage the privacy preferences of patients (e.g., opt-in with exceptions, opt-out with exceptions, opt-in, opt-out) in their privacy consent directive.	1472
	2. The system SHOULD provide the ability to capture the patient's preferences regarding providers who are permitted to access, or explicitly excluded from accessing, the patient's information.	1473
	3. The system SHOULD provide the ability to render disclosure events.	1474
	4. The system SHOULD provide the ability to render an accounting of any patient identifiable information disclosed to other providers.	1475
	5. The system MAY provide the ability to enter, import or receive information that documents the patient's expressed selection of privacy preferences related to the disclosure of information identified by its content type (e.g., related diagnosis or payment method), and a specific purpose.	1476
	6. The system SHOULD provide the ability to manage data visibility based on both privacy policy, and patient's privacy consent.	1477
	7. The system MAY provide the ability to link to privacy consent management systems to access patients' privacy consent directives and digital certificates.	1478
AS.3 Header Manage Personal Health Record Interaction		1479
	Statement: Provide the system support in managing the interaction with a patient's PHR. **Description:** The system can support interaction with the patient's PHR. It can also manage documentation related to the PHR-S consent and access directives.	
AS.3.1 Function Manage Information Exchange with Patient PHR		1480
	Statement: Support the ability to capture, and/or have interactions with patient PHR systems to enable the creation and maintenance of demographic, clinical and administrative information. **Description:** The patient's PHR demographic, clinical and administrative data set is needed to support identification and to enhance the prospect for interoperability. The PHR Account Holder should be able to request or make changes to their demographic data and allow for export of all or parts of the demographic data to other systems.	
	1. The system MAY provide the ability to manage patient information (e.g., demographic, clinical and administrative) through an interaction with an external system (e.g., Personal Health Record).	1481
	2. The system MAY transmit an alert or notification to a patient's provider that new information is available as a result of interaction with an external system (e.g., Personal Health Record system).	1482
	3. The system SHOULD provide the ability to receive requests for patient information from external systems (e.g., patient's Personal Health Record).	1483
	4. The system SHOULD provide the ability to transmit patient's information to an external system(e.g., patient's Personal Health Record).	1484
	5. The system SHOULD transmit the status (e.g., acknowledgement, pending, rejected) of an external system's request for information.	1485
AS.3.2 Header Manage Legal and Other Related PHR files		1486
	Statement: Manage legal and other related electronic documents that allow or restrict the use or disclosure of the PHR Account Holder’s information. **Description:** The system should support the capture and management of files, and/or related electronic documents related to the use or disclosure of the patient's PHR information. These files, and/or documents may include scanned images or electronic images sent via attachment. The system does not judge the authenticity of the document. The system may allows for multiple instances of the same document (e.g., multiple authorizations). The system may allow for retiring but tracking of documents no long used. The system should support the removal of documents as request by the patient via their PHR system.	
AS.3.2.1 Function Manage Consents and Authorizations from a PHR		1487
	Statement: Maintain the Consents and Authorization directives/statements from the patient's PHR.	

Section/Id#: Type: Name:	Conformance Criteria	Row#
Description: Provide the ability to manage Consents and Authorizations from a Personal Health Record including manage access control for individual elements of records to which the Consent or Authorization applies		
	1. The system SHOULD provide the ability to manage Consents and Authorizations from a Personal Health Record according to scope of practice, organizational policy, and/or jurisdictional law.	1488
	2. The system SHOULD provide the ability to render the identity and relationship (e.g., Dr. Smith, primary care physician or Jane Doe, sister-in-law) of the person(s) for which the Consent or Authorization applies.	1489
	3. The system SHOULD provide the ability to manage access control to the patient's information as specified by the Consent or Authorization according to scope of practice, organizational policy, and/or jurisdictional law.	1490
	4. The system SHOULD provide the ability to manage access control for the section(s) of the patient's record to which the Consent or Authorizations applies according to scope of practice, organizational policy, and/or jurisdictional law.	1491
	5. The system MAY provide the ability to manage access control for individual elements of records to which the Consent or Authorization applies according to scope of practice, organizational policy, and/or jurisdictional law.	1492
	6. The system MAY provide the ability to manage access control for the time period within which the Consent or Authorization applies according to scope of practice, organizational policy, and/or jurisdictional law.	1493
	7. The system MAY provide the ability to render Consents and Authorizations.	1494
AS.3.2.2 Function Manage PHR End-of-Life Documents and Other Advance Directives		1495
Statement: Manage Personal Health Record electronic documents that provide the patients direction for end-of-life care and manage other types of Advance Directives. **Description:** Advanced directives may need to be harmonized with external systems (e.g., Personal Health record system).		
	1. The system SHOULD provide the ability to manage Personal Health Record files and documents related to Advance Directives and end of life care directives (e.g., living will, do not resuscitate orders).	1496
	2. The system SHOULD provide the ability to render a sorted list of end of life care directives based on one or more defined data elements.	1497
	3. The system MAY provide the ability to render a list of documents by category of document (e.g., Active, Non Active, Obsolete).	1498
	4. The system SHOULD maintain a list of the location of advanced directives, end-of-life care directives.	1499
AS.4 Header Manage Communication		1500
Statement: Support communication to enable the exchange of information internally and between healthcare and non-healthcare organizations. **Description:** Communication among providers involved in the care process can range from real time communication (e.g., communication between a therapist and nurse), to asynchronous communication (e.g., consult reports between physicians). Some forms of inter-practitioner communication will be paper based and the EHR-S must be able to produce appropriate documents.The system should provide for both verbal and written communication. These exchanges would include but not be limited to consults, and referrals as well as possible exchanges within the office as part of the provision and administration of patient care (e.g., the communication of new information obtained within the office environment during the process of administration of a tetanus shot while the patient is in the exam room).		
AS.4.1 Function Manage Registry Communication		1501
Statement: Enable the exchange of structured demographic and clinical information with registries (e.g., local disease-specific, notifiable, patient, provider, organization, and health services registries) for patient monitoring and subsequent epidemiological analysis. **Description:** The system can provide for automated or user-initiated exchange of individuals' health information to disease-specific registries or other notifiable registries (such as immunization registries). These exchanges should use standard data transfer protocols or messages. The systems should allow for updating and configuration of communication with new registries.		
	1. The system SHALL provide the ability to exchange structured demographic and clinical information with registries (e.g., local, disease specific, notifiable, patient, provider, organization, or health services registries).	1502
	2. The system MAY provide the ability to render and tag registry information as reviewed and the information's related assessment of validity or applicability for clinical, financial or administrative activities.	1503

Section/Id#: Type: Name:	Conformance Criteria	Row#
	3. The system SHOULD provide the ability to maintain information received from registries (e.g., local, disease specific, notifiable, patient, provider, organization, or health services registries).	1504
	4. The system MAY provide the ability to receive structured demographic and clinical information from registries.	1505
	5. The system SHOULD provide the ability to harmonize system information with registry information.	1506
AS.4.2 Function Support for Communications Within an Organization		1507

Statement: Facilitate communications regarding patient data and status within a health care organization.

Description: There needs to be an ability to communicate patient data and status (e.g., patient history, patient physical examination), discrete clinical data (e.g., blood pressure, pulse, temperature, pulse oximetry, laboratory data, microbiology data, radiology data), and orders between clinical systems in the facility (e.g., ambulatory, inpatient and ED).

	1. The system SHOULD provide the ability to render patient status tracking data on patient status devices or other patient tracking systems.	1508
	2. The system SHOULD determine and render patient information appropriate to the care setting, and/ or the patient's condition, on status/patient/tracking displays.	1509
	3. The system SHOULD render patient information that can be used for status and patient tracking systems (e.g., tracking display, ED status board) that displays, as a minimum: patient identification, patient location, medical condition, care process status, study status, vital signs, and inter-staff communication notes as applicable.	1510
AS.4.3 Function Support for Communications Between Organizations		1511

Statement: Facilitate communications regarding patient orders, data and status between organizations.

Description: There needs to be an ability to communicate patient data and status (e.g., patient history, patient physical examination), discrete clinical data (e.g., blood pressure, pulse, temperature, pulse oximetry, laboratory data, microbiology data, radiology data), and orders(e.g., medications, tests) between health care organizations, particularly during patient transfers.This information may include items such as outstanding patient requests, clinician care recommendations, and outstanding treatment and workflow tasks for the patient. Organizations can include both health care providing organizations (e.g., hospitals, nursing homes) and non-health care providing organizations (e.g., funeral homes, disaster operations, employers).

	1. The system SHOULD provide the ability to render patient transfer information to other health care organizations (e.g., hospitals, clinics, specialists, nursing homes) according to scope of practice, organizational policy, and/or jurisdictional law.	1512
	2. The system MAY provide the ability to render selected patient transfer information to non-health care organizations (e.g., funeral home) according to scope of practice, organizational policy, and/ or jurisdictional law.	1513
AS.4.4 Function Support for Provider-Employer Communications		1514

Statement: Provide support for capturing employment information, and/or special work related requirements (e.g., flyers, divers, firemen, transportation workers) to assist in medical disposition choices and notifications, and support communication to employers.

Description: The ability to capture and maintain a patient's employment information, to include contact information and job title, which is expected to be helpful to the clinician when a patient's work environment may affect the assessment of alternative diagnoses, applicable to the individual, as well as the potential treatment(s) that have been tailored to the individual based on their occupation.

	1. The system MAY provide the ability to capture patient's employment data relevant to potential medical conditions.	1515
	2. The system MAY provide the ability to capture data used to determine if a patient is able to fulfill physical job requirements and/ or special work requirements as part of their medical disposition.	1516
	3. The system MAY provide the ability to manage reporting to employers on a patient's ability to fulfill physical or special job requirements as a result of their medical disposition.	1517
AS.5 Header Manage Clinical Workflow Tasking		1518

Statement: Create, schedule, update and manage tasks with appropriate timeliness.

Description: Since an electronic health record will replace the paper chart or other paper-based system, tasks that were based on the paper artifact must be effectively managed in the electronic environment. Functions must exist in the EHR-S that support electronically any workflow that previously depended on the existence of a physical artifact (such as the paper chart, a phone message slip) in a paper based system. Tasks differ from other more generic communication among participants in the care process because they are a call to action and target completion of a specific workflow in the context of a patient's health record (including a specific component of the record). Tasks also require disposition (final resolution). The initiator may optionally require a response.

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	For example, in a paper based system, physically placing charts in piles for review creates a physical queue of tasks related to those charts. This queue of tasks (for example, a set of patient phone calls to be returned) must be supported electronically so that the list (of patients to be called) is visible to the appropriate user or role for disposition. The state transition (e.g., created, performed and resolved) may be managed by the user explicitly or automatically based on rules. For example, if a user has a task to signoff on a test result, that task should automatically be marked complete by the EHR when the test result linked to the task is signed in the system. Patients will become more involved in the care process by receiving tasks related to their care.	
AS.5.1 Function Clinical Task Creation, Assignment and Routing		1519
	Statement: Creation, assignment, delegation, and/or transmission of tasks to the appropriate parties. **Description:** A "Task" is a specific piece of work or duty that is assigned to a person or entity. A task often needs to be accomplished within a defined period of time or by a deadline. Tasks are often managed by an activity (or project) tracking mechanism (e.g., as part of an automated business rule process). Tasks are determined by the specific needs of patients and practitioners in a care setting. Task creation may be automated, where appropriate. An example of a system-triggered task is when laboratory results are received electronically; a task to review the result is automatically generated and assigned to a responsible party. Tasks are at all times assigned to at least one user or role for disposition. Whether the task is assignable and to whom the task can be assigned will be determined by the specific needs of practitioners in a care setting. Task-assignment lists help users prioritize and complete assigned tasks. For example, after receiving communication (e.g., a phone call or e-mail) from a patient, the triage nurse routes or assigns a task to return the patient's call to the physician who is on call physician. Another example is for a urinalysis, the nurse routes or assigns a task to clinical staff to collect a urine specimen, and for the results to be routed to the responsible physician and person ordering the test. Task creation and assignment may be automated, where appropriate. An example is when (International Normalized Ratio) INR results are received they should be automatically routed and assigned to the staff person in the clinic responsible for managing all of the patients that are having INR tests done. Task assignment ensures that all tasks are disposed of by the appropriate person or role and allows efficient interaction of entities in the care process. When a task is assigned to more than one individual or role, an indication is required to show whether the task must be completed by all individuals/ roles or if only one completion suffice.	
	1. The system SHALL provide the ability to capture new tasks.	1520
	2. The system SHOULD provide the ability to auto-populate task information based on rules, patient information, triggering events, and/or resource factors.	1521
	3. The system SHALL provide the ability for the user to enter and update an assignment for a task to one or more individuals or roles.	1522
	4. The system SHOULD provide the ability to capture oral (e.g., telephone, voice-over-IP or in-person) communication between providers and patients or their representatives (including the identification of the providers).	1523
	5. The system SHALL provide the ability to determine and update an assignment for a task to one or more individuals or clinical roles, based on workflow rules.	1524
	6. The system SHOULD provide the ability to determine workflow task routing to individuals or roles in succession or in parallel.	1525
	7. The system SHOULD provide the ability to determine workflow task routing to multiple individuals or roles in succession or in parallel based on status and workflow rules.	1526
	8. The system SHOULD provide the ability to capture and update priorities for tasks.	1527
	9. The system SHOULD provide the ability to determine and update priorities for tasks (e.g., based on urgency assigned to the task, clinical rules and business rules).	1528
	10. The system SHOULD provide the ability to capture restrictions for task assignment based on an appropriate role according to organizational policy.	1529
	11. The system SHOULD determine restrictions for task assignment based on appropriate role according to organizational policy.	1530
	12. The system SHALL provide the ability to update the priorities of clinical tasks (e.g., to ensure timely completion).	1531
	13. The system SHOULD determine and update the priorities of clinical tasks according to organizational policy (e.g., to ensure timely completion).	1532
	14. The system SHOULD provide the ability to transmit task assignment with request for confirmation to external systems that participate in completion of the task (e.g., task requesting patient transportation OR request for meeting between providers).	1533
	15. The system SHOULD provide the ability to render a list of tasks by user or user role according to user specified criteria.	1534
	16. The system SHOULD provide the ability to determine time periods and recipients for notification of overdue medication administrations.	1535
	17. The system SHOULD provide the ability to render a notification to the clinician of overdue medication administrations.	1536
	18. The system SHOULD provide the ability to determine time periods for order expiration for types of orders.	1537
	19. The system SHOULD provide the ability to render a notification to the ordering clinician concerning orders due to expire.	1538

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	20. The system SHOULD provide the ability to render a notification to the ordering clinician concerning orders requiring signature (e.g., verbal and telephone orders, co-signature).	1539
	21. The system SHOULD provide the ability to enter and maintain the clinical task assignments and pre-conditions expected for performance of identified/selected health care procedures according to scope of practice, organizational policy, and/or jurisdictional law.	1540
	22. The system SHOULD provide the ability to reassign a single task or group of tasks to available roles when primary role selected is not available.	1541
	23. IF the system determines that applicable tasks and pre-conditions expected have not been performed, THEN the system SHOULD transmit a notification to a patient's provider or to the patient's care team according to scope of practice, organizational policy, and/or jurisdictional law.	1542
AS.5.2 Function Clinical Task Assignment and Routing for Medication Management & Administration		1543

Statement: Assignment, delegation, and/or transmission of tasks for Medication Orders and Prescription Management.

Description: There are tasks that are specific to prescription management. An example of a system-triggered task is when a medication defined as for continuous use runs out, a notification task should be initiated for evaluation of the need to renew or not. Quality care implies consideration of medication continuation or renewal in light of various patient and visit factors . This requires also that the relevant information is presented to the clinician in an effective manner. The decision by the clinician must then be captured in an efficient manner and actioned by the system through task assignment and communication. Presentation of tasks to be carried out needs to be in a manner that facilitates their execution and management and needs to correspond to user preferences. For example, the list could be ordered by priority or by pharmacy phone number for efficiency.

	1. The system SHOULD provide the ability for the user to enter set rules for being notified about medication continuation, and/or renewal for specific patients.	1544
	2. The system SHOULD provide the ability to determine and render cases for which the clinician needs to evaluate the need for renewal of a medication, given the specific rules set for the patient, and patient profile, visit history, current medication and treatments.	1545
	3. The system SHOULD present relevant information on the patient to facilitate decision on medication continuation or renewal.	1546
	4. The system SHALL provide the ability to determine the tasks to be performed in relation to medication continuation or renewal.	1547
AS.5.3 Function Clinical Task Linking		1548

Statement: Linkage of tasks to EHR components, patients, and/or a relevant part of the electronic health record.

Description: Clinical tasks must include information or provide an electronic link to information that is required to complete the task. There is a need to create the appropriate links and, then, to have the system automatically present the information that was linked. For example, this may include a patient location in a facility, a patient's, and/or family's contact information, or a link to new laboratory results in the patient's EHR. Other example: the linkage of prescription task to the appropriate patient care plan to facilitate follow-up actions; a task to take weights links to the 'Weights and Vitals' screen to record the result; a task to complete a fall assessment links to the fall assessment form to be completed. An example of a well defined task is "Dr. Jones must review Mr. Smith's blood work results." Efficient workflow is facilitated by navigating to the appropriate area of the record to ensure that the appropriate test result for the correct patient is reviewed.

	1. The system SHALL provide the ability to link a clinical task to the component of the EHR system required to complete the task.	1549
	2. The system MAY automatically present the component of the system required to complete a clinical task.	1550
	3. The system SHOULD provide the ability to link a non clinical task to a clinical task.	1551
	4. The system SHALL provide the ability to link a clinical task to a patient.	1552
AS.5.4 Function Clinical Task Status Tracking		1553

Statement: Track tasks to facilitate monitoring for timely and appropriate completion of each task.

Description: In order to reduce the risk of errors during the care process due to missed tasks, the provider is able to view the status of each task (e.g., unassigned, on hold, started, performed, canceled, denied, and resolved) and current work lists, lists of unassigned tasks or undisposed tasks, or of other tasks where a risk of omission exists. The timeliness of certain tasks can be tracked, or reports generated, in accordance with relevant law and accreditation standards. For example, a provider is able to create a report that shows tests that have not yet been performed such as urine specimen obtained, blood work drawn, etc. Another example is that of an electronic prescribing system that would track when a refill request or prescription change is received, who it has been assigned to, the action performed, and when it was completed.

	1. The system SHALL provide the ability to update the status of tasks.	1554
	2. The system SHOULD provide the ability to determine and update the status of tasks based on workflow and clinical rules and according to scope of practice, organizational policy, and/or jurisdictional law.	1555

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	3. The system SHALL provide the ability to render notices of the status of tasks to providers.	1556
	4. The system MAY provide the ability to capture subscription preferences for notices of changes in the status of tasks.	1557
	5. The system SHALL provide the ability to determine the order of clinical tasks based on status.	1558
	6. The system SHOULD provide the ability to present current clinical tasks as work lists.	1559
	7. The system SHOULD provide the ability to enter configuration parameters for filtering and rendering of clinical task lists.	1560
	8. The system SHOULD provide the ability to render clinical task lists based on configuration entered by the user.	1561
	9. The system MAY render a notification to the tasking or requesting provider when clinical tasks are complete.	1562
	10. The system SHOULD provide the ability to enter time limits on particular tasks that have a deadline or require follow-up.	1563
	11. The system SHOULD provide the ability to determine when time limits for particular tasks are exceeded.	1564
	12. IF the system provides the ability to determine when time limits for a particular task are exceeded;, THEN the system SHALL provide the ability to render a list of these tasks.	1565
	13. The system SHOULD render a list of tasks that have not been completed at any time including the time of patient disposition.	1566
	14. The system SHALL provide the ability to update task status (e.g., unassigned, on hold, started, performed, canceled, denied, and resolved).	1567
	15. The system SHOULD determine and update the status of tasks based on workflow rules.	1568
AS.6 Header Manage Resource Availability		1569

Statement: Manage the availability of healthcare resources to support the provision of care.

Description: Resources may include human resources (e.g., providers, support personnel) as well as physical resources (e.g., facilities, transportation, equipment, supplies). Managing resources includes managing the availability of necessary resources to support the provision of care including resource scheduling and managing information about the resources (e.g., availability, capabilities). The management of resources may also include supporting triage categorization, waiting rooms and patient acuity and severity determination.

AS.6.1 Function Manage Facility Demographics		1570

Statement: Maintain facility demographic information.

Description: Demographic information is necessary to uniquely define a healthcare facility (e.g., hospital, freestanding birthing center, clinic, doctor's office, hospice, or nursing home/long-term care facility, transportation/ambulance provider). Example of demographic information may include the facility name, physical location and unique facility identifier (e.g., U.S. National Provider Identifier).

	1. The system SHALL provide the ability to manage the facility's demographic information (e.g., the facility name, facility address, facility type, and the registration number of the facility in accordance with jurisdictional law).	1571
	2. The system MAY capture transfer facility demographic information for a transfer patient.	1572
AS.6.2 Function Manage Healthcare Resource Availability Information		1573

Statement: Support the collection and distribution of local healthcare resource information, through interactions with other systems, applications, and modules, to enable planning and response to extraordinary events such as local or national emergencies.

Description: In times of identified local or national emergencies and upon request from authorized bodies, provide current status of healthcare resources including, but not limited to, available beds, providers, support personnel, ancillary care areas and devices, operating theaters, medical supplies, vaccines, and pharmaceuticals. The intent is to enable the authorized body to distribute or re-distribute either resources or patient load to maximize efficient healthcare delivery. In addition, these functions may also be used for internal assessment and planning purposes by facility administrators.

	1. The system MAY manage healthcare resource availability through interactions with other systems, applications and modules (e.g., available beds, providers, support personnel, ancillary care areas and devices, operating theaters, medical supplies, vaccines, and pharmaceuticals) according to scope of practice, organizational policy, and/or jurisdictional law.	1574
AS.6.3 Function Manage Healthcare Resource Scheduling		1575

Statement: Support interactions with other systems, applications, and modules to provide the necessary data to a scheduling system for optimal efficiency in the scheduling of patient care, for either the patient or a resource/device.

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	Description: The system may support user access to scheduling systems as required. Relevant clinical or demographic information required in the scheduling process could be linked to the task.	
	1. The system SHOULD provide the ability to capture and render patient care resource scheduling information, either internal or external to the system.	1576
	2. The system MAY provide the ability to manage the schedule of internal or external healthcare resources or devices (e.g., ambulance, wheel chair, dialysis machine).	1577
	3. The system MAY exchange relevant clinical or demographic information to support the resource scheduling process.	1578
	4. The system MAY transmit relevant clinical or demographic information to support resource scheduling in coordination with other systems.	1579
	5. The system MAY render clinical or demographic information for children or other dependents with the same guarantor to support efficient scheduling with other systems (e.g., a mother with multiple children receiving immunizations).	1580
	6. The system MAY provide the ability to manage patient appointment requests with health care providers (e.g., evaluate availability, present choices and make the selection for in-person or remote encounter).	1581
	7. The system MAY provide the ability to render a patient's, and/or provider's appointment schedule.	1582
	8. The system MAY provide the ability to capture appointment scheduling requests from patients.	1583
AS.6.4 Function Support Triage Categorization		1584
	Statement: Provide support for prioritizing patients based upon acuity, wait time, and practitioner load. **Description:** An EHR-S should support the management of patients waiting for care by displaying them and supporting decisions by the clinicians who are caring for them. The triage process not only collects data on arriving patients, but the categorization and prioritization of patients who are unable to be seen immediately. It is a dynamic process where patient priorities change over time. Unless a care team has unlimited resources, some patients will invariably need to wait.	
	1. The system SHALL provide a means to manage a triage acuity rating for a patient.	1585
	2. The system SHALL capture, maintain and render triage acuity ratings derived from standardized acuity scales.	1586
	3. The system MAY provide the ability to capture and maintain configurable triage acuity ratings according to scope of practice, organizational policy, and/or jurisdictional law.	1587
	4. The system MAY present evidence based triage business rules algorithms during the triage process.	1588
	5. The system MAY capture and update a triage assignment in response to specific prompts for patient associated data or data already captured in the record (e.g., arrival by ambulance, age, vital signs).	1589
AS.6.5 Function Support Waiting Room Management		1590
	Statement: Provide support to waiting room management **Description:** An EHR-S should support the reporting, tracking and alerts needed to help managethose patients that need to wait and supporting prioritization decisions by the clinicians who are caring for them.	
	1. The system SHALL present a list of triaged patients.	1591
	2. The system SHOULD provide the ability to present triaged patients filtered and sorted simultaneously by multiple criteria, such as provider, ward, triage acuity rating and wait time.	1592
	3. The system MAY render an alert when a parameter has been exceeded, such as the number of patients waiting, or the length of wait time.	1593
	4. The system SHOULD provide the ability to store information about wait times.	1594
AS.6.6 Function Support Patient Acuity and Severity Determination		1595
	Statement: Provide the data necessary to support and manage patient acuity and severity determination for illness/risk-based adjustment of resources. **Description:** Acuity data helps determine appropriate staffing – as modified by the nurses' level of experience, the organization's characteristics, and the quality of clinical interaction between and among physicians, nurses, and administrators. Research has been done on nurse staffing and patient outcomes; the impact of organizational characteristics on nurse staffing patterns, patient outcomes, and costs; and the impact of nurses' experience on patient outcomes. The research indicates that nurse staffing has a definite and measurable impact on patient outcomes, medical errors, length of stay, nurse turnover, and patient mortality. Also, acuity and severity data is routinely the evidential basis most frequently cited by staff when recommending clinical staffing changes.	
	1. The system SHOULD provide the ability to capture (i.e., collect) data to support the patient acuity/ severity processes for illness/risk-based adjustment of resources.	1596
	2. The system MAY provide the ability to extract and transmit (i.e., export) data to support the patient acuity/severity processes for illness/risk-based adjustment of resources.	1597

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	3. The system MAY render a prompt for the user to provide key data needed to support acuity/severity processes.	1598
	4. The system MAY provide the ability to determine patient acuity, and/or severity levels.	1599
AS.7 Header Support Encounter/Episode of Care Management		1600

Statement: Manage and document the health care needed and delivered during an encounter/episode of care.

Description: Using data standards and technologies that support interoperability, encounter management promotes patient-centered/ oriented care and enables real time, immediate point of service, point of care by facilitating efficient work flow and operations performance to ensure the integrity of (1) the health record, (2) public health, financial and administrative reporting, and (3) the healthcare delivery process.This support is necessary for care provision functionality that relies on providing user interaction and workflows. These interactions and workflows are configured according to clinical protocols and business rules. These protocols and rules are based on encounter specific values such as care setting, encounter type (inpatient, outpatient, home health, etc.), provider type, patient's EHR, health status, demographics, and the initial purpose of the encounter.

AS.7.1 Function Manage Presentation Filters		1601

Statement: Present specialized views based on the encounter-specific values, clinical protocols and business rules.

Description: The system user is presented with a presentation view and system interaction appropriate to the context with capture of encounter-specific values, clinical protocols and business rules. This "user view" may be configurable by the user or system technicians. As an example, a mobile home health care worker using wireless laptop at the patient's home would be presented with a home health care specific workflow synchronized to the current patient's care plan and tailored to support the interventions appropriate for this patient, including chronic disease management protocols.

	1. The system SHOULD provide the ability to capture and maintain presentation filters that are specific to the types of encounter (e.g., care provider specialty, location of encounter, date of encounter, associated diagnosis).	1602
	2. The system MAY provide the ability to capture and maintain presentation filters that are specific to the patient demographics.	1603
	3. The system SHOULD provide the ability to capture and maintain (i.e., tailor) an individual user's "user view".	1604
AS.7.2 Function Support Encounter Documentation		1605

Statement: Provide assistance in assembling data, supporting data collection and processing output from a specific encounter.

Description: Workflows, based on the encounter management settings, will assist (with triggers alerts and other means) in determining and supportingdata collection, import, export, extraction, linkages and transformation. As an example, a pediatrician is presented with diagnostic and procedure codes specific to pediatrics. Business rules enable automatic collection of data from the patient's health record and patient registry. As the provider enters data, workflow processes are triggered to populate transactions and documents. For example, data entry might populate an eligibility verification transaction or query the immunization registry.

	1. The system SHOULD determine and render workflow support for data collection in a care setting.	1606
	2. The system SHOULD provide the ability to capture and maintain encounter and care setting specific data entry workflows.	1607
	3. The system SHOULD provide the ability to extract information from the patient record as necessary to support documentation of the patient encounter.	1608
	4. The system SHOULD capture and maintain a reduced set of diagnostic and procedure codes for the care setting.	1609
	5. The system MAY analyze the information entered into the encounter and, based on business rules, initiate secondary reporting workflows.	1610
AS.7.3 Function Support Financial Reporting		1611

Statement: Provide clinical data to support administrative and financial reporting.

Description: The system may be able to generate or support the creation of a bill based on health record data. Maximizing the extent to which administrative and financial data can be derived or developed from clinical data by the system, will lessen provider reporting burdens and the time it takes to complete administrative and financial processes such as claim reimbursement. This may be implemented by mapping of clinical terminologies in use to administrative and financial terminologies. Administrative and financial systems may be integrated or non-integrated.

	1. The system SHOULD provide the ability to capture and maintain clinical data for administrative and financial requirements.	1612
	2. The system SHOULD export appropriate data in required format to administrative and financial systems according to scope of practice, organizational policy, and/or jurisdictional law.	1613
AS.7.4		1614

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Function Support Remote Healthcare Services		
	Statement: Support remote health care services such as tele-health and remote device monitoring by integrating records and data collected by these means into the patient's record for care management, billing and public health reporting purposes. **Description:** Enables remote treatment of patients using monitoring devices, and two way communications between provider and patient or provider and provider. Promotes patient empowerment, self-determination and ability to maintain health status in the community. Promotes personal health, wellness and preventative care. For example, a diabetic pregnant mother can self-monitor her condition from her home and use web TV to report to her provider. The same TV-internet connectivity allows her to get dietary and other health promoting information to assist her with managing her high-risk pregnancy.	
	1. The system SHOULD provide the ability to capture patient data from remote devices and integrate that data into the patient's record.	1615
	2. The system MAY provide the ability to render patient data to remote devices.	1616
AS.7.5 Function Manage Transitions of Care and Discharged Patients		1617
	Statement: Provide a means to manage outstanding patient issues after the encounter, for transits of care and discharge. **Description:** After the completion of an encounter, a number of tasks may remain for discharge planning, patient instructions and transitions of care. There may be outstanding laboratory tests (i.e. blood cultures) radiology interpretations, or other tasks such as arrangement of home health aids (VNA), transportation or calls to the patient's primary care provider during office hours to establish follow-up. There must be a way to track and document these tasks after the conclusion of the encounter.	
	1. The system SHOULD provide the ability to manage post-encounter tasks (e.g., discharge planning, patient instructions, transfer activities).	1618
	2. The system SHOULD provide the ability to tag the patient as a transfer patient (e.g., hospital-to-hospital, birthing facility, and long-term-care-facility to hospital).	1619
	3. The system MAY provide the ability to link transfer facility demographic information to the transfer patient.	1620
	4. The system MAY provide the ability to capture the transfer mode of transportation (e.g., ambulance, airplane).	1621
	5. The system MAY provide the ability to capture transportation provider demographics.	1622
AS.8 Header Manage Information Access for Supplemental Use		1623
	Statement: Support extraction, transformation and linkage of information from structured data and unstructured text in the patient's health record for care management, financial, administrative, and public health purposes. **Description:** Information in the patient's health record is used for administrative purposes (e.g., care management, finance and public health services) that are supplemental to care provision and care provision support. Using data standards and technologies that support interoperability, information access functionalities serve primary and secondary record use and reporting. This health record information may include internal and external sources of patient data.	
AS.8.1 Function Support Rules-Driven Clinical Coding		1624
	Statement: Make available all pertinent patient information needed to support coding of diagnoses, procedures and outcomes. **Description:** The user is assisted in coding information for clinical reporting reasons. For example, a professional coder may have to code the principal diagnosis in the current, applicable ICD as a basis for hospital funding. All diagnoses and procedures during the episode may be presented to the coder, as well as the applicable ICD hierarchy containing these codes.	
	1. The system SHALL provide the ability to render patient information needed to support coding of diagnosis, procedures and outcomes.	1625
	2. The system MAY provide the ability to determine coding of diagnoses, procedures and outcomes based on provider specialty, care setting and other information that may be entered into the system during the encounter.	1626
	3. The system SHOULD provide the ability to analyze clinical documents for deficiencies (e.g., missing information) using coding based rules.	1627
	4. The system SHOULD render the results of document coding deficiencies (e.g., missing information) analysis to the coder.	1628
	5. The system SHOULD provide the ability to render the results of a coding documentation deficiency analysis to the appropriate user(s) (e.g., the deficient document or a link to same).	1629
	6. The system SHOULD provide the ability to integrate the deficiency remediation into the coding workflow.	1630

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	7. The system SHOULD provide the ability to present configurable (e.g., with respect to content, time of presentation), standard reports that support clinical documentation coding workflow.	1631
	8. The system MAY provide the ability to present configurable (e.g., with respect to content, time of presentation), ad-hoc reports that support clinical documentation coding workflow.	1632
	9. The system SHOULD capture the time of care provision to facilitate correct coding.	1633
	10. The system MAY capture and maintain user preferences for how the list of diagnoses are rendered (e.g., numerical order, alphabetic order).	1634
	11. The system SHOULD provide the ability to link statements regarding diagnoses with codes when more than one code is required for a condition (e.g., multiple codes for a single condition, late effects and cause, etiology and manifestation).	1635
AS.8.2 Function Support Rules-Driven Financial & Administrative Coding		1636
Statement: Provide financial and administrative coding assistance based on the structured data and unstructured text available in the encounter documentation. **Description:** The user is assisted in coding information for billing or administrative reasons. For example, in the US Domain, the HIPAA 837 Professional claim requires the date of the last menstrual cycle for claims involving pregnancy. To support the generation of this transaction, the provider would need to be prompted to enter this date when the patient is first determined to be pregnant, then making this information available for the billing process.		
	1. The system SHALL provide the ability to maintain and render financial and administrative codes.	1637
	2. The system SHOULD provide the ability to extract data from the electronic health record as required to simplify the coding of financial and administrative documentation.	1638
	3. The system MAY render rules driven prompts to facilitate the collection of data in the clinical workflow that is required for administrative and financial coding.	1639
	4. The system MAY provide the ability to determine coding required for administrative and financial documents based on provider specialty, care setting and other information that may be entered into the system during the encounter.	1640
	5. The system MAY determine (e.g., internally generate) administrative and financial coding (e.g., place of service, type of facility, tax rates, etc.).	1641
	6. The system SHOULD provide the ability to render notification to appropriate user(s) about coding related documentation deficiencies.	1642
	7. The system MAY provide the capability to render highlighting of coding related documentation deficiencies.	1643
AS.8.3 Function Support Integration of Cost/ Financial information into Patient Care		1644
Statement: Support interactions with other systems, applications, and modules to enable the use of cost management information required to guide users and workflows. **Description:** The provider is alerted or presented with the most cost-effective services, referrals, devices, etc., to recommend to the patient. This may be tailored to the patient's health insurance/plan coverage rules. Medications may be presented in order of cost, or the cost of specific interventions may be presented at the time of ordering.		
	1. The system MAY provide the ability to extract formularies, preferred providers, and other information, from internal or external sources, that are associated with a patient's health care plan and coverage so that the provider can offer cost effective alternatives to patients.	1645
	2. The system MAY provide the ability to extract information about exemptions on coverage limitations and guidelines.	1646
	3. The system MAY provide the ability to capture or transmit the request for information about exemptions on coverage limitations and guidelines.	1647
	4. The system MAY provide the ability to render expected patient out-of- pocket cost information for medications, diagnostic testing, and procedures, from internal or external sources, that are associated with a patients health care plan and coverage.	1648
	5. The system MAY provide the ability to render a notification of an alert to the provider of care where formularies, preferred provider and other information indicate the health plan requires an alternative.	1649
	6. The system SHOULD conform to function AS.9.3 (Support Service Authorizations) to integrate support of prior authorization processes.	1650
AS.8.4 Function Manage Healthcare Facility Performance Information		1651
Statement: Support the import or retrieval of data necessary to review available quality, performance, and cost measurements regarding healthcare facilities.		

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Description: The ability to access information to help facilities with the gathering, managing and using data to assist in the assessment of quality, performance and cost measurements.	
	1. The system SHOULD provide the ability to manage healthcare facility data required to assess health care quality, performance and cost.	1652
AS.8.5 Function Support for Provider Training		1653
	Statement: Provide the ability to clinician and staff training requirements and document proficiency. **Description:** In order to deliver quality care, health care systems train their staff in the processes, workflows, and tools required to deliver quality patient care. This training is necessary when staff are initially hired, and also periodically as the evidence-based medical guidance or the tools available to the health care systems change. The system can have a role to track and document the training requirement, progress and proficiency. The system may control user access to system functionality based on training.	
	1. The system SHOULD provide the ability to capture information on clinician training received and clinician proficiency requirements met, as defined by the applicable professional and governing organizations (e.g., Graduate Medical Education [GME] Program Information File [PIF], for a residency review committee [RRC]).	1654
	2. The system SHOULD provide the ability to render reports on clinician training and proficiency, as defined by the applicable professional and governing organizations (e.g., Graduate Medical Education [GME] Program Information File [PIF], for a residency review committee [RRC]).	1655
	3. The system MAY provide the ability to capture and render reports on role-based clinician training.	1656
	4. The system MAY provide the ability to import and transmit data to external systems for centralized tracking of training.	1657
	5. The system MAY provide the ability to render a notification of enhancements, updates or new training requirements based on their individual training records.	1658
	6. The system MAY provide the ability to maintain user authorizations based upon training received, and/or proficiency requirements met according to scope of practice, organizational policy, and/or jurisdictional law.	1659
	7. The system SHOULD provide the ability to render context-sensitive training and education "help files".	1660
	8. The system SHOULD provide the ability to remove personal patient identifying information on educationally relevant clinical consults for training and archiving.	1661
AS.9 Header Manage Administrative Transaction Processing		1662
	Statement: Support the creation (including using external data sources, if necessary), electronic interchange, and processing of transactions listed below that may be necessary foradministrative management during an episode of care. **Description:** Support the creation (including using external data sources, if necessary), electronic interchange, and processing of transactions listed below that may be necessary for administrative management during an episode of care.The EHR system collects patient health-related information needed for purpose of administrative and financial activities including reimbursement.Captures the episode and encounter information to pass to administrative or financial processes (e.g., triggers transmissions of charge transactions as by-product of on-line interaction including order entry, order statusing, result entry, documentation entry, medication administration charting).Automatically retrieves information needed to verify coverage and medical necessity. As a byproduct of care delivery and documentation captures and presents all patient information needed to support coding. Ideally performs coding based on documentation.Clinically automated revenue cycle - examples of reduced denials and error rates in claims.Clinical information needed for billing is available on the date of service.Physician and clinical teams do not perform additional data entry / tasks exclusively to support administrative or financial processes.	
AS.9.1 Function Support Financial Plan Enrollment		1663
	Statement: Support interactions with other systems, applications, and modules to facilitate enrollment of uninsured patients into subsidized and unsubsidized health plans, and enrollment of patients who are eligible on the basis of health, and/or financial status in social service and other programs, including clinical trials. **Description:** Expedites determination of health insurance coverage, thereby increasing patient access to care. The provider may be alerted that uninsured patients may be eligible for subsidized health insurance or other health programs because they meet eligibility criteria based on demographics, and/or health status. For example a provider is notified that the uninsured parents of a child enrolled in S-CHIP may now be eligible for a new subsidized health insurance program; a provider of a pregnant patient who has recently immigrated is presented with information about eligibility for subsidy. Links may be provided to online enrollment forms. When enrollment is determined, the health coverage information needed for processing administrative and financial documentation, reports or transactions is captured.	
	1. The system SHOULD provide the ability to capture subsidized and unsubsidized health plan options from internal or external sources to allow for presentation of alternatives for health care coverage to patients.	1664
	2. The system SHOULD provide the ability to manage multiple status options for multiple registries and directories. (e.g., roster based, population based, research based funding; US initiatives of	1665

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Accountable Care Organizations (ACO), Patient Center Medical Home (PCMH) and other managed care lists/memberships/directories).	
	3. The system MAY provide the ability to capture government-sponsored health plan enrollment criteria.	1666
	4. The system MAY provide the ability to determine and render government sponsored plans that align with the patient's demographics (e.g., health and financial status).	1667
AS.9.2 Function Support Financial Eligibility Verification		1668
Statement: Support interactions with other systems, applications, and modules to enable eligibility verification for health insurance and special programs, including verification of benefits and pre-determination of coverage. **Description:** Retrieves information needed to support verification of coverage at the appropriate juncture in the encounter workflow. Improves patient access to covered care and reduces claim denials. When eligibility is verified, the system could prompt a provider to capture eligibility information needed for processing administrative and financial documentation, reports or transactions; updating or flagging any inconsistent data. In addition to health insurance eligibility, this function would support verification of registration in programs and registries, such as chronic care case management and immunization registries. A system would likely verify health insurance eligibility prior to the encounter, but would verify registration in case management or immunization registries during the encounter.		
	1. The system SHOULD provide the ability to capture patient health plan eligibility information for date(s) of service.	1669
	2. IF the system does not provide the ability to exchange electronic eligibility information (e.g., health plan coverage dates) with internal and external systems, THEN the system SHALL provide the ability to enter and maintain patient health plan coverage dates.	1670
	3. The system MAY provide the ability to capture general benefit coverage information for patients.	1671
	4. The system SHOULD store eligibility date(s) of service, coverage dates, general benefits and other benefit coverage documentation for service rendered according to scope of practice, organizational policy, and/or jurisdictional law.	1672
	5. The system MAY provide the ability to capture electronic eligibility information from internal and external systems.	1673
	6. The system MAY provide the ability to render information received through electronic prescription eligibility checking.	1674
	7. The system MAY provide the ability to capture and maintain patient registration in special programs (e.g., registries and case management).	1675
	8. The system MAY provide the ability to analyze for inconsistencies present in eligibility and coverage information (e.g., coverage dates, patient identity data, coverage status), as captured, and render a notification to the user on inconsistencies present.	1676
	9. The system MAY provide the ability to render information received through provider eligibility checking.	1677
AS.9.3 Function Support Service Authorizations		1678
Statement: Support interactions with other systems, applications, and modules to enable the creation of requests, responses and appeals related to service authorization, including prior authorizations, referrals, and pre-certification. **Description:** Retrieves information needed to support verification of medical necessity and prior authorization of services at the appropriate juncture in the encounter workflow. Improves timeliness of patient care and reduces claim denials.		
	1. The system SHOULD provide the ability to capture service authorizations relevant to the service provided including the source, dates, and service(s) authorized.	1679
	2. The system SHOULD provide the ability to capture referrals relevant to the service provided including the source, date and service(s) referred.	1680
	3. The system MAY provide the ability to exchange computer readable data on service authorizations according to scope of practice, organizational policy, and/or jurisdictional law.	1681
	4. The system MAY provide the ability to exchange computer readable data on service referral information according to scope of practice, organizational policy, and/or jurisdictional law.	1682
	5. The system SHOULD provide the ability to export electronic referral(s), including relevant supporting clinical information from care providers internal or external to the organization.	1683
	6. The system MAY provide the ability to export electronic referral(s), including relevant supporting administrative information from care providers internal or external to the organization.	1684
AS.9.4 Function Support Service Requests and Claims		1685
Statement: Support interactions with other systems, applications, and modules to support the creation of health care attachments for submitting additional clinical information in support of service requests and claims.		

Section/Id#: Type: Name:	Conformance Criteria	Row#
Description: Retrieves structured and unstructured data, including but not limited to laboratory data, imaging data, device monitoring data, and text based data, based on rules or requests for additional clinical information, in support of service requests or claims, at the appropriate juncture in the encounter workflow.		
	1. The system SHALL provide the ability to render available, applicable clinical information to support service requests.	1686
	2. The system SHALL provide the ability to render available, applicable clinical information to support claims.	1687
	3. The system MAY provide the ability to render available clinical information to support service requests in computer readable formats, according to business rules or the information requested.	1688
	4. The system MAY provide the ability to render available clinical information to support claims in computer readable formats, according to business rules or the information requested.	1689
AS.9.5 Function Support Financial Claims & Encounter Reports		1690
Statement: Support interactions with other systems, applications, and modules to enable the creation of claims and encounter reports for reimbursement. **Description:** Retrieves information needed to support claims and encounter reporting. This reporting occurs at the appropriate juncture in the encounter workflow in a manual or automated fashion. For example this could occur at an initial, interim or final billing. The system may also present the information that is provided for audit and review.		
	1. The system SHALL provide the ability to render available information needed to enable the creation of claims and encounter reports for reimbursement.	1691
	2. The system SHALL provide the ability to capture and render available data as required for audit and review according to scope of practice, organizational policy, and/or jurisdictional law.	1692
	3. The system MAY provide the ability to render available data in a computer readable form when needed to enable the creation of claims and encounter reports for reimbursement.	1693
	4. The system MAY provide the ability to render data, using either internal or external reporting tools, to support coding of diagnosis, procedure and outcomes.	1694

5. Population Health Support Section

Section Overview

The Population Health Support Section focuses on those functions required of the EHR to support the prevention and control of disease among a group of people (as opposed to the direct care of a single patient), usually with something(s) in common, e.g., reside in the U.S., have diabetes, are under the age of 5, are treated by the same care provider, have pneumonia and are in a long-term care facility, etc. This section includes functions to support input to systems that perform medical research, promote public health, & improve the quality of care at a multi-patient level. Population health data must be managed carefully to avoid inadvertently breaching patient privacy and confidentiality. Individual patients may be identifiable within a population or aggregate based on information other than patient identifiers, e.g., age plus location, and/or based on a combination of public and population-based information. This section specifically addresses requirements related to patient privacy and consent for use of patient information for secondary uses, and/or reporting. All functions within the Population Health Support Section have an identifier starting with “POP”.

Section/Id#: Type: Name:	Conformance Criteria	Row#
POP.1 Header Support for Health Maintenance, Preventative Care and Wellness		1256
Statement: Evaluate patient information to provide alerts, notifications and reminders regarding health, preventative care and wellness. **Description:** The system assists in determining ongoing and pertinent communications from the provider to patient to promote health, preventative care and wellness.		
POP.1.1 Function Present Alerts for Preventative Services and Wellness		1257
Statement: Identify patient-specific suggestions/reminders, screening tests/exams, and other preventative services in support of routine preventative and wellness care. **Description:** At the time of an encounter, the provider or patient is presented with due or overdue activities based on protocols for preventative care and wellness. Examples include routine immunizations, adult and well child care, age and gender appropriate screening exams, such as PAP smears.		
	1. The system SHALL provide the ability to manage criteria for disease management, wellness, and preventative services based on patient demographic data (minimally age and gender).	1258
	2. The system SHOULD provide the ability to capture and maintain the rules or parameters upon which guideline-related alerts are based.	1259
	3. The system SHOULD provide the ability to manage clinical decision support criteria for disease management, wellness, and preventative services based on clinical data (e.g., problem/diagnosis list or current medications).	1260
	4. The system SHALL provide the ability to render alerts based on recognized-standard guidelines, and/or locally-defined standard guidelines.	1261
	5. The system SHOULD provide the ability to render a list of all alerts along with the scheduled date and time for the preventative care and wellness.	1262
	6. The system MAY provide the ability to render a history of all alerts that were generated for the patient in the record.	1263
	7. The system SHOULD provide the ability to capture and maintain reasons disease management or preventative services/wellness prompts were overridden.	1264
	8. The system SHOULD provide the ability to capture and maintain documentation that a preventative or disease management service has been performed based on activities documented in the record (e.g., vitals signs taken).	1265
	9. The system SHOULD provide the ability to capture and maintain documentation that a disease management or preventative service has been performed with associated dates or other relevant details recorded.	1266
	10. The system SHOULD provide the ability to capture, maintain and render alerts to individual patients regarding their specific clinical situation.	1267
	11. The system SHOULD determine when the patient's monitored health parameters have exceeded threshold values according to scope of practice, and/or organizational policy, and transmit an alert to a patient's provider or to the patient's care team.	1268
	12. The system SHOULD determine and render notifications regarding drug-drug interaction(s) (e.g., drug-drug, drug duplication, drug-disease, drug-allergy, and/or drug-food) to the patient's provider or to the patient's care team when changes are made to a population health decision support rule set according to scope of practice, organizational policy, and/or jurisdictional law.	1269
POP.1.2 Function		1270

Section/Id#: Type: Name:	Conformance Criteria	Row#
Present Notifications and Reminders for Preventative Services and Wellness		
	Statement: Evaluate and notify patient, and/or provider of those preventative services, tests, or behavioral actions that are due or overdue. **Description:** The system generates notifications to patients regarding activities that are due or overdue. Examples include but are not limited to time sensitive patient and provider notification of follow-up appointments, laboratory tests, immunizations or examinations. The notifications can be customized in terms of timing, repetitions and administration reports. For example, a PAP test reminder might be sent to the patient two months prior to the test being due, repeated at three month intervals, and then reported to the administrator or clinician when nine months overdue.	
	1. The system SHALL capture, maintain, and render timely notifications to patients, and/or appropriate providers of preventative services, tests or behavioral actions that are due or overdue on an individual patient.	1271
	2. The system SHOULD capture in the patient's record a history of preventative service and wellness related system notifications regarding that patient.	1272
	3. The system SHOULD provide the ability to determine and present overdue preventative services.	1273
	4. The system MAY provide the ability to capture, maintain and render configuration parameters regarding patient notifications (e.g., number of repetitions of the notification, timing of the notification, escalation in priority).	1274
	5. The system SHOULD provide the ability to update content of preventative service and wellness related notifications, guidelines, reminders and associated reference materials.	1275
	6. The system SHOULD provide the ability to manage the guidelines, criteria or rules that trigger the preventative service and wellness related notifications.	1276
	7. The system MAY provide the ability to manage the lifecycle of preventative service and wellness related notifications and reminders (e.g., mode of communication or timing of escalation from reminder to urgent alert).	1277
	8. The system MAY provide the ability to capture and maintain the documentation of manual outreach activities (e.g., e-mail, letter or associated telephone conversation).	1278
POP.2 Header Support Population-Based Epidemiological Investigation		1279
	Statement: Support for population-based internal and external epidemiological investigations of clinical health of aggregate patient data for use in identifying health risks from the environment, and/or population in accordance with jurisdictional law. **Description:** A care provider, public health expert, or organization may wish to analyze data from cohorts,(i.e., subpopulations defined by certain characteristics or conditions). For example, cohorts can be described in terms of demographics; education and social status; health status, diseases, or outcomes; industry and occupation; or injuries. Population health analysts, such as experts in public health departments, may compile individual, and/or population information reported or otherwise gathered from multiple EHRs within the jurisdictional area for surveillance and research. Populations of one or none also can be informative. By analyzing specified data for a cohort, public health experts and care providers can monitor disease prevalence and health-related trends; evaluate behavioral, socio-economical, occupational, and other impacts on health; and identify potential outbreaks and associated risk factors. Examples include:- examining a cohort of patients with measles for a common (implied) exposure, such as attending the same school - following a cohort of diabetics with out-of-range markers, or analyze them from various perspectives, such as by occupation, blood sugar range, drugs that are being used and not being used. - examining a cohort of bakers for a higher-than-expected prevalence of asthma. - Upon suspicion of a flu outbreak, reviewing a cohort of patients who have presented in the Emergency Department in the last three days complaining of breathing difficulty. - Examining cohorts of smokers with lung disease, sand-blasters with breathing disorders, adults with asthma, etc. A broad range of information is used for population health surveillance and analyses, including (but not limited to) health status/disease/outcomes, completion/results of recommended health screens, current or previous medical treatment data, demographics, education, marital status, social factors, family history of diseases, personal history (e.g., alcohol and tobacco use, reading capability, hearing deficiency), and environmental factors (such as occupation and industry, shift-work, hobby). The information may or may not be coded; the text may be structured or unstructured. Person-level data is used to identify persons with specified characteristics such as exposures, symptoms, risk factors, injuries, genetic markers, diseases or health outcomes that may require further care. Person-level data also is required to evaluate groupings of injuries, diseases or adverse health outcomes. Issues of access to person-level data while securing patient privacy are relevant. Data also may be monitored and analyzed in “aggregate” (for example, by age range, geographic location, socio-economic level, or education level), depicting the quantity of records, and/or content within each aggregate. Aggregates may be used to report de-identified data to public health, for example, cases of influenza-like-illness by age range.Case and population information are subject to public health reporting. Care organizations may require population health reports, for example, to measure quality of care based on health improvements for populations under the care of their providers. Statistical analyses are a key component to analyzing population health data, such as epidemiological investigations to identify relationships between risks (such as exposures or behaviors) and health conditions. Individual clinicians or healthcare organizations may employ limited capabilities in EHR systems to analyze population health data. The EHR system also should be capable of interacting with, and leveraging, the capabilities of specialized external analytical systems.The investigator may hide or mask certain aspects of epidemiological investigation information, as necessary according to scope of practice, policy, and/or law. The investigator may desire to tag or remove patients from the cohort who have relocated or died.	
POP.2.1 Function Support for Epidemiological Investigation Data Collection		1280

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Statement: Support for Person-Level and Aggregate-Level Queries to Generate Population Cohorts, and/or Aggregates to be used in epidemiologic investigations and reports. **Description:** Population health analysts (investigators) examine health data for trends and conditions through the use of well-defined queries to create their data sets. Preparing such well-defined queries, i.e., selection criteria and parameters, used to generate a cohort can be a complex and iterative process. The investigator may desire to use pre-defined or self-constructed queries (which may be saved for reuse). During the process of defining a query, the investigator may desire to accumulate statistics regarding the results of interim queries (e.g., number of patients in the query result) to determine the suitability of the queries, and subsequently modify the final query. The investigator maintains sets of queries by constructing names that depict the cohorts, the fields comprising the queries and, perhaps, values for those fields. The resultant data set generated should be validated against the intended purpose of the query. Queries may need to be saved to support future analysis of the same (or a similar) cohort. For example, the investigator may construct an "Insulin study for males age 65 and older" query that is used to review patients of a specific age, gender and drug usage, then also construct an "Insulin study for females age 65 and older" query by modifying a copy of the first one. Queries may identify "static" or "dynamic" cohorts. A "static cohort" query identifies and monitors certain patients within a given cohort over time (e.g., pregnant patients who arrived in the Emergency Department in January, 2012 and followed throughout their pregnancies). A "dynamic cohort" query may identify new patients to be added periodically to a cohort (e.g., the number of pregnant patients who arrived in the Emergency Department during each month). Information compiled by using a query may need to be governed by applicable policies and regulations. For example, psychiatric data may need to be excluded from a given epidemiological investigation. The query may need to specify that subjects are de-identified or aggregates are created according to the requirements of the analysis or privacy restrictions. For example, queries may be made of de-identified aggregate subjects to evaluate possible medical products safety issues quickly and securely. Data aggregation may be used to de-identify subjects, to condense the cohort, or to sub-divide a given cohort into various "aggregates" (for example, by age range, geographic location, socio-economic level, or education level), depicting the quantity of records, and/or content within each aggregate. Aggregate data may need to be integrated or linked d within or across cohorts. The criteria for data aggregation also may be applied to different cohorts.	
	1. The system SHALL provide the ability to manage queries (e.g., criteria and parameters based on surveillance parameters, demographic, and/or clinical information) for use in extracting one or more cohorts, and/or aggregates according to scope of practice, organizational policy, and/or jurisdictional law.	1281
	2. The system SHALL provide the ability to capture and maintain pre-defined criteria and parameters (e.g., based on demographic, and/or clinical information) for use in extracting one or more cohorts, and/or aggregates.	1282
	3. The system SHALL provide the ability to capture and maintain ad hoc criteria and parameters specified by the user (e.g., based on demographic, and/or clinical information) for use in extracting one or more cohorts, and/or aggregates	1283
	4. The system SHALL provide the ability to capture and render the attributes (namely, the metadata) of a query (for example, query name, description, fields, values, and/or assumptions).	1284
	5. The system SHALL provide the ability to maintain new cohort or cohorts.	1285
	6. The system SHOULD provide the ability to integrate previously-defined cohorts.	1286
	7. The system SHOULD provide the ability to integrate previously-defined aggregates within a cohort, and/or across cohorts and maintain the new aggregate or aggregates.	1287
	8. The system SHALL provide the ability to manage data-visibility as a query component according to scope of practice, organizational policy, and/or jurisdictional law	1288
	9. The system SHOULD provide the ability to render indicators (e.g., to investigators, caregivers or patients) regarding the queries in which a certain patient was included according to scope of practice, organizational policy, and/or jurisdictional law.	1289
	10. The system SHOULD conform to TI.5.3 (Standards-Based Application Integration) to suppport the creation of a query.	1290
	11. The system SHALL provide the ability to manage ad hoc inquiries from public health organizations (e.g., requests for information related to demographic or clinical information) according to scope of practice, organizational policy, and/or jurisdictional law.	1291
	12. The system SHALL provide the ability to manage case-reporting requirements defined by public health organizations as queries according to scope of practice, organizational policy, and/or jurisdictional law.	1292
	13. The system MAY provide the ability to capture, maintain, and render sets of questions that support disease outbreak investigations (e.g., disease-exposure questionnaires, disease-tranmission contact tracing). The sets of questions are authored by public health authorities and facilitate patient-information gathering by the care provider.	1318
POP.2.2 Function Support for Epidemiologic Data-Analysis		1293
	Statement: Support for Cohort Person-Level and Aggregate-Level Data Content and Analysis **Description:** The EHR system assists care providers, public health experts and others in assessing patient and population health conditions. Healthcare can be improved if analyses are performed on a population basis to evaluate care delivery, health status and disease trends, and identify potential modifiable risk factors. The various ways of analyzing a population (cohort) can be complex. Some population-based research examines relationships between events or exposures and their corresponding outcomes. Other population-based research may focus on healthcare utilization, service availability and quality of care. Population-level surveillance, monitoring	

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	of disease, and epidemiologic research involves analysis of data based on existing relationships between pre-defined and well-known data elements. These analyses utilize various data elements including demographics, education, marital status, social factors, family history of diseases, personal history (e.g., alcohol and tobacco use, reading capability, hearing impairment), environmental factors (such as proximity to toxic exposures), occupational factors (such as type of occupation and industry, shift-work, training, hobby), genomic and proteomic data elements, resource utilization, problem lists, and other clinical information. The identification of new and previously unrecognized patterns of disease may require sophisticated pattern recognition analysis. Early recognition of new patterns may require data available early in the disease presentation. For example, an investigation of pneumococcal disease may involve a trend analysis of the causative serotype (laboratory data) over time, evaluated per age group of patients diagnosed with pneumonia (aggregates). Several aggregates may be identified (e.g., multiple age groups). Each aggregate then is analyzed as a group for selected data pattern(s) using data elements that include, but are not limited to, patient demographics, presenting symptoms, acute treatment regimens, occupational information, and laboratory and imaging study orders and results.	
	1. The system SHALL provide the ability to manage query results (i.e., cohorts, and/or aggregates) according to scope of practice, organizational policy, and/or jurisdictional law.	1294
	2. The system SHOULD provide the ability to analyze various combinations of aggregates within a cohort (e.g., to determine the adequacy of patient confidentiality in the result).	1295
	3. The system SHALL provide the ability to manage person-level information in a cohort or aggregate using user-identified, and/or pre-defined criteria (e.g., demographic or clinical information) according to scope of practice, organizational policy, and/or jurisdictional law	1296
	4. The system SHOULD provide the ability to determine, tag and render changes in dynamic cohorts.	1297
	5. The system SHOULD conform to TI.5.3 (Standards-Based Application Integration) to manage query results.	1298
	6. The system SHOULD provide the ability to analyze and render statistical information that has been derived from query results, including, but not limited to, person-level data and aggregates.	1299
POP.2.3 Function Support for Cohort and Aggregate Data Sharing		1300
	Statement: Support cohort and aggregate-level population data sharing within an organization, and/or with other organizations. **Description:** Population health data needs to be shared in a number of formats. The cohort and aggregate data (query results) may need to be shared within a facility or transmitted to other organizations on an ad hoc or periodic (namely, regularly scheduled) basis. For example, public health surveillance, monitoring and research often rely on analysis of data from multiple sources, including EHR systems. The data may need to be prepared in user-defined formats or formats defined by external parties. The care provider, public health expert, or organization may need to transmit individual or aggregate data in multiple formats (e.g., to an external statistical analytic application or to public health agencies to meet reporting requirements). Query results may need to be viewed, saved, and/or printed in pre-defined or ad hoc report formats, (e.g., for quality reporting within the care organization). Some or all members of a cohort or population may need to be anonymized, depending on the rules governing the data sharing.	
	1. The system SHALL provide the ability to capture, maintain, and render a request for a population-based query result according to scope of practice, organizational policy, and/or jurisdictional law.	1301
	2. The system SHALL provide the ability to capture, maintain, and render pre-defined report criteria (e.g, fields to be included in the resulting report or dataset), parameters, formats, and metadata that specify use, and/or reuse of the reported data according to scope of practice, organizational policy, and/or jurisdictional law (e.g., the metadata may indicate that the report is intended for initial, confirmatory or other analyses).	1302
	3. The system SHOULD provide the ability to enter, maintain, and render ad hoc (user-specified) report criteria (e.g., the fields to be included in the resulting report or dataset), parameters, formats, and metadata that specify use, and/or reuse of the reported data according to scope of practice, organizational policy, and/or jurisdictional law (e.g., the metadata may indicate that the report is intended for initial, confirmatory or other analyses).	1303
	4. The system SHALL provide the ability to maintain and render the results of a query (e.g., person-level lists, case reports, or aggregates) as specified by the requestors' report criteria using a recognized or a locally-defined standard (e.g., via reporting formats that are specified by public health guidelines).	1304
	5. The system SHALL provide the ability to capture, maintain, and render with reports the metadata that specify use, and/or reuse of the reported data according to scope of practice, organizational policy, and/or jurisdictional law (e.g., the metadata may indicate that the report is intended for preliminary, confirmatory or other analyses; or the metadata may also indicate that the data may only be used for surveillance purposes).	1305
	6. IF standardized transmission of the results of a query are required to/from a registry or directory, THEN the system SHALL conform to function TI.3 (Registry and Directory Services).	1306
	7. The system SHALL provide the ability to render the results of a query in the form of a dataset that can be used by other program areas using analytical software (e.g., statistical software programs) according to scope of practice, organizational policy, and/or jurisdictional law.	1307
	8. The system SHALL provide the ability to render the results of a query according to applicable privacy and confidentially rules (to prevent identification of individuals by unauthorized parties) according to scope of practice, organizational policy, and/or jurisdictional law.	1308
	9. The system SHALL provide the ability to transmit information related to individual case reports, including clinical information (e.g., test results) from a care provider to public health organizations (e.g., public health notifiable, and/or reportable condition programs) according to scope of practice,	1309

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	organizational policy, and/or jurisdictional law (e.g., a care provider notifies the local public health authority of an individual case of a sexually-transmitted disease that was identified during the analysis of a related query).	
	10. The system SHOULD provide the ability to capture, maintain, and render the request for a population-based query result using a recognized-standard, and/or locally-defined report format or metadata according to jurisdictional law.	0
POP.3 Function Support for Notification and Response		1310
Statement: Upon notification by an external, authoritative source of a health risk within the cared-for population, alert relevant providers regarding specific potentially at-risk patients with the appropriate level of notification. **Description:** After receiving a notice of a health risk within a cared-for population from public health authorities or other external authoritative sources:*Identify and notify individual care providers or care managers that a risk has been identified and requires attention; and *Provide suggestions on the appropriate course of action.A care provider now has the ability to decide how patients are notified, if necessary. For example, this function may be used after detection of a local outbreak of hepatitis A, advising providers of the at-risk population and potential prophylactic treatment. A second example might be the dissemination of new care guidelines for elderly patients with a specific chronic disease.Notifications to clinicians or patients may occur by telephone, email, FAX or other methods.		
	1. The system SHALL provide the ability to capture, maintain and render the identity of individual care providers or care managers within a cared-for population according to scope of practice, organizational policy, and/or jurisdictional law.	1311
	2. The system SHALL provide the ability to render a response notification to the care providers or care managers within a cared-for population that a health risk notification was received.	1312
	3. The system SHALL provide the ability to capture, maintain and render notification of a health risk within a cared-for population from public health authorities or other external authoritative sources.	1313
	4. The system SHOULD provide the ability to manage, in coordination with local, regional, state and national programs, dissemination of notifications of health risk to individual care providers or care-managers.	1314
	5. The system SHOULD provide the ability to transmit notifications to patients, directly or indirectly, who are described by the health risk alert.	1315
	6. The system SHOULD determine and present suggestions to the care provider indicating an appropriate course of action regarding a population health risk notification.	1316
	7. The system SHALL provide the ability to render notifications/reports to public health authorities or other external authorities regarding health risks within a cared-for population according to scope of practice, organizational policy, and/or jurisdictional law.	1317
POP.4 Function Support for Monitoring Response Notifications Regarding a Specific Patient's Health		1319
Statement: In the event of a health risk alert, evaluate whether expected actions have been taken, and execute follow-up notification otherwise. **Description:** The system assists in follow-up for a specific patient event that has failed to occur (e.g., follow up to a health alert or absence of an expected laboratory result) and communicate the omission to the appropriate care provider(s).		
	1. The system SHALL determine and render to the provider specific recommended actions that may be taken at the patient level regarding a health risk alert.	1320
	2. The system SHALL determine and render a notification to appropriate care providers of specific actions to be taken regarding the set of patients who are the target of a health risk alert.	1321
	3. The system SHALL determine and render a list of those patients who have not received appropriate action in response to a health risk alert.	1322
	4. The system SHALL provide the ability to determine and render a status report regarding the compliance of the set of all patients who are the target of a health risk alert.	1323
POP.5 Function Donor Management Support		1324
Statement: Manage population-based information regarding potential human-product donors, and/or recipients. **Description:** Population-based health risks often require the identification of potential donors and recipients (e.g., during a disaster, blood is often needed). Other population-based donors and recipients may need to be identified for items such as organs, eggs, sperm, or stem cells. The user can make this information available to internal and external donor matching agencies. A consent or authorization includes patient authorization for redisclosure of sensitive information to third parties (such as donor management).		
	1. The system MAY provide the ability to manage the demographic, clinical and consent information that is needed for the population health-based human-product donation.	1325
	2. The system MAY capture demographic and clinical information about potential human-product donors.	1326

Section/Id#: Type: Name:	Conformance Criteria	Row#
	3. The system MAY capture demographic, clinical and consent information about a human-product donation.	1327
	4. The system MAY transmit documented demographic and clinical information about potential human-product donors to other principals according to scope of practice, organizational policy, and/or jurisdictional law.	1328
	5. The system MAY transmit documented demographic, clinical and consent information about the human-product donation to other principals according to scope of practice, organizational policy, and/or jurisdictional law.	1329
POP.6 Header Measurement, Analysis, Research and Reports		1330

Statement: Support the capture and subsequent export or retrieval of data necessary for the measurement, analysis, research and reporting.

Description: Information from the EHR-S may be used to support measurement, analysis, research and reporting to improve the provision of care. Reporting may include:- reporting on patient outcome of care by population, facility, provider or community;- providing quality, performance, and accountability measurements for which providers, facilities, delivery systems, and communities are held accountable;- support process improvement measures and related initiatives; and- support health care organizational performance monitoring and improvement.

POP.6.1 Function Outcome Measures and Analysis		1331

Statement: Support the capture and subsequent export or retrieval of data necessary for the reporting on patient outcome of care by population, facility, provider or community.

Description: Many regions require regular reporting on the healthcare provided to individuals and populations. The system needs to provide the report-generating capability to easily create these reports or provide for the export of data to external report-generating software. The system may also provide the functionality to prompt for the collection of necessary information at the appropriate time in a patient encounter if such collection need can be properly defined in a workflow (e.g., requesting specific information for reporting of emergency services such as drug overdose, suspected abuse, communicable diseases, or for the collection of additional research data for a specific diagnosis).

	1. The system SHOULD provide the ability to render data required to evaluate patient outcomes.	1332
	2. The system SHOULD determine and render data by selection criteria (e.g., physician, facility, facility subsection, clinical research protocol number, or community) to evaluate patient, and/or population outcomes.	1333
	3. The system SHOULD provide the ability to capture and maintain outcome measures for a specific patient, and/or groups of patients with a specific diagnosis.	1334
	4. The system SHOULD provide the ability to capture and maintain measures to evaluate patient, and/or population outcomes to meet various regional requirements.	1335
	5. The system SHOULD provide for the ability to capture and render unique patient, and/or population outcome data defined to meet regional requirements.	1336
	6. The system SHOULD provide the ability to capture, maintain and render report formats for the export of patient, and/or population outcome data.	1337
	7. The system SHOULD provide the ability to capture and maintain notification phrases and prompts in the clinical care setting that would request information needed to comply with regional patient, and/or population outcome measurement requirements when specific triggers are met.	1338
	8. The system SHOULD render patient, and/or population outcome data or query results to appropriate organizations (e.g., Quality Measurement organizations, Accreditation organizations) through a secure data service.	1339
	9. The system SHALL provide the ability to tag patients who have been identified as exempt from being included on certain population-based reports (e.g., reports that would exclude the identity of a very important person (e.g., president of a country).	1340
	10. IF the system provides the ability to tag patients who have been identified as exempt from being included on certain population-based reports, THEN the system SHALL provide the ability to manage-data-visibility for those patients.	1341
POP.6.2 Function Quality, Performance and Accountability Measures		1342

Statement: Support the capture and subsequent export or retrieval of patient, and/or population data necessary to provide quality, performance, and accountability measurements for which providers, facilities, delivery systems, and communities are held accountable.

Description: Many regions require regular reporting on the healthcare provided to individuals and populations. This reporting may include measures related to or addressing processes, outcomes, costs of care, quality of care, adherence to best practice guidelines, and credentialing and privileging monitoring. The system needs to provide the report-generating capability to easily create these reports or provide for the export of data to external report-generating software.

Section/Id#: Type: Name:	Conformance Criteria	Row#
	1. The system SHOULD provide the ability to render patient, and/or population data required to assess health quality, performance and accountability measures to appropriate organizations.	1343
	2. The system SHOULD provide the ability to capture and maintain multiple data sets required for health care quality, performance and accountability measurements (e.g., the number of flu shots given, or the number of pregnant women counseled to take folic acid).	1344
	3. The system SHOULD render patient, and/or population health care quality, performance and accountability measures data in a report format that can be displayed, transmitted electronically, or printed.	1345
	4. The system SHOULD render patient, and/or population health care quality, performance and accountability measures data or query results through a secure data service.	1346
	5. The system SHOULD determine and render patient, and/or population health care quality, performance and accountability measures in real-time, near real-time or just-in-time according to scope of practice, organizational policy, and/or jurisdictional law.	1347
	6. The system MAY determine and render to administrative and financial systems the formula used for measuring patient, and/or population health care quality, performance and accountability measures, according to scope of practice, organizational policy, and/or jurisdictional law.	1348
POP.6.3 Function Support for Process Improvement		1351

Statement: Support the capture and subsequent export or retrieval of data necessary to support process improvement measures and related initiatives.

Description: Many organizations and institutions may require regular reporting of data necessary to support improvement in the effectiveness and efficiency of care. These reports may include, but is not limited to, specific data such as patient outcomes, patient safety, processes of care, workflow and costs of care. The system needs to provide the report generating capability to easily create these reports or provide for the export of data to external report generating software.

	1. The system SHOULD provide the ability to capture necessary data (e.g., clinical user feedback) supporting organizational efforts to optimize the EHR System (EHR-S).	1352
	2. The system SHOULD provide the ability to capture necessary data (e.g., patient satisfaction feedback) supporting organizational efforts to improve the quality of healthcare and patient satisfaction.	1353
	3. The system SHOULD provide the ability to analyze returned patient survey data and render the results to facilitate improvements in provider-patient interactions, healthcare delivery, etc.	1354
	4. The system SHOULD provide the ability to manage realm or organizational relevant health care delivery performance measurements (e.g., Healthcare Effectiveness Data and Information Set (HEDIS), time to aspirin from arrival, or time to antibiotics in pneumonia).	1355
	5. The system SHOULD provide the ability to manage ad hoc health care delivery performance measurements (e.g., Healthcare Effectiveness Data and Information Set (HEDIS), time to aspirin from arrival, or time to antibiotics in pneumonia).	1356
POP.6.4 Function Support for Care System Performance Indicators (Dashboards)		1357

Statement: Capture, determine and render data necessary to support health care organizational performance monitoring and improvement.

Description: Health care organizations and institutions may seek to display summary information to assist in care system performance, in the form of dashboards and graphic displays, to support delivery of care and improvement of processes. These dashboards should utilize all appropriate data available in the system to address the healthcare system's process improvement and care delivery issues and then display the results in appropriate role-based formats. These displays may be in the form of routine daily, weekly or monthly graphics or real-time displays of selected metrics to improve care delivery, and/or performance. Note: Even though the system may be capable of automatically managing certain data-driven feedback mechanisms, it is also necessary for the provider to have the ability of manually managing certain feedback mechanisms (e.g., by overriding the system's choices).

	1. The system SHALL provide the ability to manage data-driven feedback mechanisms that assist in patient management and healthcare delivery.	1358
	2. The system SHOULD provide the ability to manage data-driven feedback mechanisms, (e.g., reports, dashboards, watchboards), that assist in patient management and healthcare delivery.	1359
	3. The system SHOULD render real-time departmental load metrics (e.g., nurse-to-patient ratios, Emergency department capacity limits), automatically (i.e., without further human intervention).	1360
POP.7 Function Public Health Related Updates		1361

Statement: Receive and validate formatted inbound communications to facilitate updates to the system's public health reporting guidelines.

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Description: Information and reporting requirements from outside groups, such as public health organizations, may be made available to care providers. Examples may include requirements to report on new disease types, or changes to reporting guidelines. The information in these public health updates may be applied to the system so that appropriate data can be collected and reported to comply with requirements.	
	1. The system SHOULD provide the ability to capture and update public health reporting guidelines.	1362
	2. The system MAY provide the ability to render information that will promote the validation of the public health education material prior to update.	1363
POP.8 Function De-Identified Data Request Management		1364
	Statement: Provide patient data in a manner that meets applicable requirements for de-identification. **Description:** When an internal or external party requests patient data and that party requests de-identified data (or is not entitled to identified patient information, either by law or custom), the user can export the data in a fashion that meets the requirements for de-identification in that locale or realm.An auditable record of these requests and associated exports may be maintained by the system. This record could be implemented in any way that would allow the who, what, why and when of a request and export to be recoverable for review.A random re-identification key may be added to the data, to support re-identification for the purpose of alerting providers of potential patient safety issues. For example, if it is discovered that a patient is at risk for a major cardiac event, the provider could be notified of this risk, allowing the provider to identify the patient from the random key.	
	1. The system SHALL conform to function TI.1.8 (Patient Privacy and Confidentiality) when managing de-identified views of data according to scope of practice, organizational policy, and/or jurisdictional law.	1365
	2. The system SHOULD provide the ability to de-identify extracted information.	1366
	3. The system SHOULD provide authorized users the ability to tag data for de-identification according to scope of practice, organizational policy, and/or jurisdictional law.	1367
	4. The system SHOULD provide authorized users the ability to transmit de-identified data to authorized recipients according to scope of practice, organizational policy, and/or jurisdictional law.	1368
	5. The system SHOULD provide the ability to transmit a re-identification key to recipients of de-identified data according to scope of practice, organizational policy, and/or jurisdictional law.	1369
	6. The system SHOULD provide the ability to edit discrete patient identifiers from all reports containing data on multiple patients according to scope of practice, organizational policy, and/or jurisdictional law (e.g., replace "John Smith" with "***").	1370
POP.9 Function Support Consistent Healthcare Management of Patient Groups or Populations		1371
	Statement: Provide the ability to identify and consistently manage healthcare over time and across populations or groups of patients that share diagnoses, problems, functional limitations, treatment, medications, and demographic characteristics that may impact care (e.g., population management, disease management, wellness management or care management). **Description:** Populations or groups of patients that share diagnoses (such as diabetes or hypertension), problems, functional limitations, treatment, medication, and demographic characteristics such as race, ethnicity, religion, socio-economic status that may impact care are identified for the clinician. The clinician is advised and assisted with management of these patients to optimize the clinician's ability to provide appropriate care. For example, a clinician is alerted to information regarding racial, cultural, religious, socio-economic, living situation and functional limitations of the patient that are required to provide appropriate care. among other examples are notification of the patients' eligibility for a particular test, therapy, or follow-up; availability of supportive resources in the community; or results from audits of compliance of these populations with disease management protocols. The system may also Include the ability to identify groups of patients based on clinical observations or laboratory test results and assist in initiating a follow-up or recall for selected patients.The system may also provide the ability to create and render configurable reports for specific populations/or topics of interest, (e.g., chronic conditions, suicidal risk, or post traumatic stress syndrome, traumatic brain injury, etc.)	
	1. The system SHALL conform to function CPS.3.4 (Support for Context-Sensitive Care Plans, Guidelines, Protocols).	1372
	2. The system SHALL provide the ability to identify patients eligible for healthcare management protocols based on criteria identified within the protocol.	1373
	3. The system SHOULD provide the ability to include or exclude a patient from an existing healthcare management protocol group.	1374
	4. The system SHOULD provide the ability to capture, maintain and render the reason for inclusion or exclusion from a protocol or protocol group.	1375
	5. The system SHOULD provide the ability to audit compliance of selected populations and groups that are the subjects of healthcare management protocols.	1376
	6. The system SHALL conform to function CPS.9.4 (Standard Report Generation).	1377
	7. The system SHOULD provide the ability to determine and present groups of patients based on similar attributes, as can be found in clinical observations or laboratory test results.	1378
	8. The system SHALL capture, maintain, and render the information necessary for patient follow-ups or recalls.	1379

Section/Id#: Type: Name:	Conformance Criteria	Row#
	9. The system SHALL capture, maintain, and render protocols and guidelines for follow-ups or recalls.	1380
	10. The system SHOULD determine and present notifications to initiate follow-ups or recalls based on protocols and guidelines.	1381
	11. The system SHOULD capture research protocol deviation information, including any verbatim text of protocol deviation.	1382
POP.10 Function Manage Population Health Study-Related Identifiers		1383
Statement: Manage information that identifies key elements of a research or population study. **Description:** Research or population studies can be distinguished from each other through the proper use of identifiers for key elements. Study key elements may include identifying the study, location where the study is being performed, patient subject of study, and investigator. Identifiers are managed through their lifecycle including capture, maintenance and rendering.		
	1. The system SHOULD provide the ability to manage unique research identifiers (i.e. sponsor-provided Protocol mnemonic) such that the research study can be identified.	1384
	2. The system SHALL provide the ability to manage the site identification number(s) as assigned by the Sponsor.	1385
	3. The system SHALL provide the ability to manage unique research subject identifiers (e.g., these identifiers could be used as a screening number prior to the subject qualifying for the clinical trial). Note: A given patient may have multiple research subject identifiers if the patient has been on multiple research studies.	1386
	4. The system SHOULD provide the ability to manage clinical research identifiers (e.g., investigator identifier or visit name) as discrete data elements.	1387

6. Record Infrastructure Section

Section Overview

The Record Infrastructure Section consists of functions common to EHR System record management, particularly those functions foundational to managing record lifecycle (origination, attestation, amendment, access/use, translation, transmittal/ disclosure, receipt, de-identification, archive…) and record lifespan (persistence, indelibility, continuity, audit, encryption). RI functions are core and foundational to all other functions of the Model (CP, CPS, POP, AS). Note extensive reference to RI functions in Overarching Criteria. RI functions may be implemented within the architecture of a single system or across a tightly coupled suite of systems (applications).All functions within the Record Infrastructure Section have an identifier starting with “RI”.

Section/Id#: Type: Name:	Conformance Criteria	Row#
RI.1 Header Record Lifecycle and Lifespan		1695

Statement: Manage Record Lifecycle and Lifespan

Description: Actions are taken to support patient health. Actions are taken in provision of healthcare to individuals. Actions are taken as the result of rules-based EHR System algorithms. Actors (i.e., patients, providers, users, systems) take Actions. (Actions broadly encompass tasks, acts, procedures or services performed or provided.) The EHR System captures Actions taken and creates corresponding Record Entries. Record Entries provide persistent evidence of Action occurrence, context, disposition, facts, findings and observations. From the point of Record Entry origination to the end of its lifespan, the EHR System manages each Entry consistent with and according to scope of practice, organizational policy, and jurisdictional law. In support of individual health and in provision of healthcare to individuals, Actors perform Actions and Actions have corresponding Entries in the EHR Record, (i.e., Action instances are documented by Record Entry instances). Record Entries may be captured during the course of the Action or sometime thereafter. The Actor (author/source) of the Record Entry may be the same as an Actor performing the Action or not. The EHRS Functional Model does not specify a particular relationship of Actions and corresponding Record Entries. It may be one to one, many to one or even one to many. Actions have associated metadata (e.g., who, what, when, where, why, how, under what conditions, in what context). The corresponding Record Entry captures this metadata along with other Action and Record Entry related information.

Each Record Entry also includes its own provenance metadata such as who (authoring Actor) and when (documented). Record Entries may be encapsulated to bind Actor (individual, organization, and/or system) signatures to data and metadata content and data/time of occurrence. Actions and related Record Entries capture a chronology of patient health and healthcare and also a chronology of operations and services provided in/by a healthcare enterprise. Record Entries reflect changes in health information from the time it was created, to the time it was amended, sent, received, etc. In this manner, each Record Entry serves as persistent evidence of an Action taken, enabling providers to maintain comprehensive information that may be needed for legal, business, and disclosure purposes. To satisfy these purposes, Record Entries must also be retained and persisted without alteration. Record Entries have both a lifecycle and a lifespan. Lifecycle Events include originate, retain, amend, verify, attest, access/view, de-identify, transmit/receive, and more. Lifecycle Events occur at various points in a Record Entry lifespan, always starting with a point of origination and retention (i.e., when the Entry is first created and stored). A Record Entry may have a pre and post Event state if content is modified. In this case, the original Record Entry is preserved (with signature binding) and a new Entry is created (with new signature binding). A Record Entry contains data and metadata, in multiple formats, following various conventions and standards. Included data may be tagged, and/or delimited, structured (concise, encoded, computable), or unstructured (free form, non-computable). Data may be encoded as text, document, images, audio, waveforms, in ASCII, binary or other encoding. Structured data may be characterized as being concise, encoded, computable, and may be divided into discrete fields.

Examples of structured health information include:

- patient residence (non-codified, but discrete field)
- diastolic blood pressure (numeric)
- coded laboratory result or observation
- coded diagnosis
- patient risk assessment questionnaire with multiple-choice answers.

Unstructured data may be characterized as being free form, and/or non-computable. Unstructured health record information is information that is not divided into discrete fields AND not represented as numeric, enumerated or codified data.

Examples of unstructured health record information include: - text (text message to physician) - word processing document (a letter from a family member) - image (photograph of a patient or a scanned image of insurance card) - multimedia (dictated report or a voice recording).

Context may determine whether data are structured or unstructured. For example, a progress note might be standardized and structured in some systems (e.g., Subjective/Objective/Assessment/Plan) but unstructured in other systems. The EHR System manages Record Lifecycle Events for each Record Entry, including pre and post Event record states, continuity, persistence and related Record Audit Logs.

RI.1.1 Function Record Lifecycle		1696

Statement: Manage Record Lifecycle

Description: As aboveReferences:- ISO 21089: Health Informatics – Trusted End-to-End Information Flows- HL7 EHR Interoperability Model DSTU- HL7 Electronic Health Record Lifecycle Model DSTU

Section/Id#: Type: Name:	Conformance Criteria	Row#
	1. The system SHALL conform to function RI.1.2.1 (Manage Record Entries) as the final step to conclude each Record Lifecycle Event in RI.1.1 (Record Lifecycle) and all child functions.	1697
RI.1.1.1 Function Originate and Retain Record Entry		1698

Statement: Originate and Retain a Record Entry (1 instance)

Description: Occurs when Record Entry is originated typically during the course of an Action itself, to document the Action and context.

Record Entry is persistent evidence of Action occurrence and includes an identified Author or Source is responsible for Record Entry content. Record Entry contains Metadata about the Action and its circumstances, e.g., who, what, when, where, facts, findings, observations, etc. An Audit Trigger is initiated to track Record Entry origination and retention. Reference: ISO 21089, Section 12.2.2.

	1. The system SHALL provide the ability to capture (originate) a Record Entry instance corresponding to an Action instance and context.	1699
	2. The system SHALL capture a unique instance identifier for each Record Entry.	1700
	3. The system SHALL capture the signature event (e.g., digital signature) of the origination entry Author, binding signature to Record Entry content.	1701
	4. The system SHALL provide the ability to capture both structured and unstructured content in Record Entries.	1702
	5. The system SHALL provide the ability to capture Record Entries from information recorded during system downtime.	1703
	6. The system SHOULD provide the ability to integrate Record Entries from Information recorded during system downtime.	1704
	7. The system SHALL provide the ability to capture the date/time an Action was taken or data was collected if different than date/time of the Record Entry.	1705
	8. The system SHOULD capture metadata that identifies the source of non-originated Record Entry (e.g., templated, copied, duplicated, or boilerplate information).	1706
	9. The system MAY provide the ability to tag unstructured Record Entry content to organize it according to need, for example, in a time-related fashion or by application-specific groups (such as photographs, handwritten notes, or auditory sounds), or by order of relative importance.	1707
	10. The system MAY capture and maintain a Record Entry encoded as a standards-based data object (e.g., HL7 Continuity of Care, other HL7 CDA R2 Document, ISO 13606 artifact).	1708
	11. The system MAY capture and maintain a standards-based data object to mirror (be duplicate and synchronous with) internal Record Entry representation.	1709
RI.1.1.1.1 Function Evidence of Record Entry Originate/Retain Event		1710

Statement: Maintain Evidence of Record Entry Originate/Retain Event

Description: Evidence of Record Entry Originate/Retain Event includes key metadata, ensures health record integrity (and trust) and enables record audit.

	1. The system SHALL audit each occurrence when a Record Entry is originated and retained.	1711
	2. The system SHALL capture identity of the organization where Record Entry content is originated.	1712
	3. The system SHALL capture identity of the patient who is subject of Record Entry content.	1713
	4. The system SHALL capture identity of the individual(s) who performed the Action documented in Record Entry content.	1714
	5. The system SHALL capture identity of the user who entered/authored Record Entry content.	1715
	6. The system SHALL capture identity of the system application which originated Record Entry content.	1716
	7. IF the source of Record Entry content is a device, THEN the system SHALL capture identity of the device.	1717
	8. The system SHALL capture the Action as evidenced by Record Entry content.	1718
	9. The system SHALL capture the type of Record Event trigger (i.e., originate/retain).	1719
	10. The system SHALL capture the date and time of Action occurrence as evidenced by Record Entry content.	1720
	11. The system SHALL capture the date and time Record Entry content is originated.	1721
	12. The system MAY capture the duration of the Action evidenced by Record Entry content.	1722
	13. The system MAY capture the physical location of the Action evidenced by Record Entry content.	1723
	14. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is originated.	1724
	15. The system MAY capture the rationale for the Action evidenced by Record Entry content.	1725
	16. The system MAY capture the rationale for originating Record Entry content.	1726

Section/Id#: Type: Name:	Conformance Criteria	Row#
	17. IF Record Entry content includes templates (boilerplate information) or copied (duplicated) information, THEN the system SHOULD capture the source of such content.	1727
RI.1.1.2 Function Amend Record Entry Content		1728
Statement: Amend content of a Record Entry (1 instance) **Description:** Occurs when Record Entry content is modified (from its original or previously retained state) – typically upon conclusion of an Action, to correct, update or complete content.- Amended Record Entry content is the responsibility of authorized amendment Author(s).- The amendment becomes part of the Act Record revision history, where the original content and any previous amendments are retained without alteration.- After amendment, the System is responsible for retention of the Record Entry and its revision history.- An Audit Trigger is initiated to track Record Entry amendment.Reference: ISO 21089, Section 12.3.2		
	1. The system SHALL provide the ability to update (amend) Record Entry content.	1729
	2. The system SHALL maintain the original and all previously amended versions of the Record Entry, retaining each version instance without alteration.	1730
	3. The system SHALL capture a new uniquely identifiable version of the Record Entry, incorporating amended content.	1731
	4. The system SHALL capture the signature event (e.g., digital signature) of the amendment Author, binding signature to Record Entry content.	1732
RI.1.1.2.1 Function Evidence of Record Entry Amendment Event		1733
Statement: Maintain Evidence of Record Entry Amendment Event **Description:** Evidence of Record Entry Amendment Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHALL audit each occurrence when a Record Entry is amended.	1734
	2. The system SHALL capture identity of the organization where Record Entry content is amended.	1735
	3. The system SHALL capture identity of the patient who is subject of amended Record Entry content.	1736
	4. The system SHALL capture identity of the user who entered/authored Record Entry content amendment.	1737
	5. The system SHALL capture identity of the system application which amended Record Entry content.	1738
	6. The system SHALL capture the type of Record Event trigger (i.e., amendment).	1739
	7. The system SHALL capture the date and time Record Entry content is amended.	1740
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is amended.	1741
	9. The system SHOULD capture the rationale for amending Record Entry content.	1742
	10. The system SHALL capture a sequence identifier for amended Record Entry content.	1743
	11. The system SHOULD capture a reference (e.g., link, pointer) to pre-amendment data for each amended Record Entry.	1744
RI.1.1.3 Function Translate Record Entry Content		1745
Statement: Translate content of Record Entries (1 or more instances) **Description:** Occurs when Record Entries are amended to include translation of content – typically to transform coded data from one coding/classification scheme to another, also from one human language to another.- Translated (amended) Record Entry content is the responsibility of translating System – which invokesmapping/translation rules for each relevant record attribute.- The translation amendment becomes part of the Record Entry revision history, where original content andany previous amendments are retained without alteration.- After translation amendment, the System is responsible for retention of the Record Entry and its revisionhistory (including the translation event).- An Audit Trigger is initiated to track Record Entry translation.Reference: ISO 21089, Sections 12.3.2 and 12.4.		
	1. The system SHALL provide the ability to render coded Record Entry content translated from one coding/classification system to another.	1746
	2. The system SHALL provide the ability to render coded Record Entry content translated from one value set to another.	1747
	3. The system MAY provide the ability to render Record Entry content translated from one human language to another.	1748
	4. The system SHOULD maintain the original and all previously amended versions of the Record Entry, retaining each version instance without alteration.	1749
	5. The system SHOULD capture a new uniquely identifiable version of the Record Entry, incorporating translated content.	1750
RI.1.1.3.1 Function		1751

Section/Id#: Type: Name:	Conformance Criteria	Row#
Evidence of Record Entry Translate Event		

Statement: Maintain Evidence of Record Entry Translate Event

Description: Evidence of Record Entry Translate Event includes key metadata, ensures health record integrity (and trust) and enables record audit.

	1. The system SHALL audit each occurrence when Record Entry content is translated.	1752
	2. The system SHALL capture identity of the organization where Record Entry content is translated.	1753
	3. The system SHALL capture identity of the patient who is subject of translated Record Entry content.	1754
	4. IF a user initiated a Record Entry content translation, THEN the system SHALL capture identity of the user initiating Record Entry content translation.	1755
	5. The system SHALL capture identity of the system application which translated Record Entry content.	1756
	6. The system SHALL capture the type of Record Event trigger (i.e., translation).	1757
	7. The system SHALL capture the date and time Record Entry content is translated.	1758
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is translated.	1759
	9. IF a user initiated a Record Entry translation, THEN the system MAY capture the rationale for translating Record Entry content.	1760
	10. The system SHALL capture a sequence identifier for translated Record Entry content.	1761
	11. The system SHALL capture the identifier and version of Translation Tools used for each translated Record Entry.	1762
	12. The system SHALL capture a reference (e.g., link, pointer) to pre-translation data for each Record Entry translation.	1763
RI.1.1.4 Function Attest Record Entry Content		1764

Statement: Attest to content of Record Entry (1 instance)

Description: Occurs when Record Entry content is attested for accuracy and completeness – typically during/after conclusion of an Action.- Attested Record Entry content is the responsibility of Attesting Author. The Attesting Author may be someone other than the originating Author, i.e., a supervisor, proctor, preceptor or other designated individual.- An Audit Trigger is initiated to track Record Entry attestation.The purpose of attestation is to show authorship and assign responsibility for an act, event, condition, opinion, or diagnosis. Every Record Entry must be identified with the author and should not be made or signed by someone other than the author unless they have authority to do so. For example, a resident may author Record Entry content but the person taking legal authority for the content is the “attester” – both individuals should be identified. (Note: A transcriptionist may transcribe an author's notes and a senior

clinician may attest to the accuracy of another's statement of events.)- Author: All users who create or contribute content and have a role in the development of a Record Entry. Some entries may be created by an author whose role is a student, transcriber or scribe. - Attester: A user who takes legal authority for Record Entry content. The attester is often the same as the author, but they may also be an individual with authority to take responsibility for Record Entry content created in whole or in part by another author(s) (e.g., student, scribe, transcriptionist).Reference: ISO 21089, Section 12.2.2.

	1. The system SHALL conform to function TI.1.1 (Entity Authentication).	1765
	2. The system SHALL conform to function TI.1.2 (Entity Authorization).	1766
	3. The system SHALL provide the ability to attest (approve and apply signature to) Record Entry content by the author.	1767
	4. The system SHALL capture the signature event (e.g., digital signature) of the Attesting Author, binding signature to Record Entry content.	1768
	5. The system SHALL provide the ability to maintain any attestable Record Entry content added or changed with the content's author	1769
	6. The system SHALL present the status of attestable Record Entry content which has not been attested, conforming to function RI.1.3.1 (Record Pending State).	1770
	7. IF the attester is different than the author(s), THEN the system SHALL provide the ability to maintain Record Entry content by properly authenticated and authorized users different from the author (e.g., counter-signature) according to scope of practice, organizational policy, and/or jurisdictional law.	1771
	8. The system SHOULD provide the ability to manage digital signatures as the means for attestation.	1772
	9. IF more than one author contributed to the Record Entry content, THEN the system SHALL provide the ability to maintain all authors/contributors associated with their content.	1773
	10. IF Record Entry content is attested by someone other than the author, THEN the system SHALL maintain and display the author(s) and attester.	1774
	11. The system SHALL provide the ability to define and present a minimum data set of author information to be displayed with Record Entry content or as outputs according to scope of practice, organizational policy, and/or jurisdictional law (e.g., name, credential, and/or position such as K. Smith, RN).	1775
	12. The system SHALL capture the signature type of the entity (individual, EHR or other system, or organization) sending Record Entry content.	1776
	13. The system SHALL capture the signature type of the entity (individual, EHR or other system, or organization) receiving Record Entry content.	1777

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	14. The system SHALL capture all signature types of the entities through which Record Entry content has passed.	1778
RI.1.1.4.1 Function Evidence of Record Entry Attestation Event		1779
Statement: Maintain Evidence of Record Entry Attestation Event **Description:** Evidence of Record Entry Attestation Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHALL audit each occurrence of Record Entry attestation (signature event).	1780
	2. The system SHALL capture identity of the organization where Record Entry content attestation (signature event) occurred.	1781
	3. The system SHALL capture identity of the patient who is subject of attested Record Entry content.	1782
	4. The system SHALL capture identity of the user attesting to Record Entry content (signature event).	1783
	5. The system SHALL capture identity of the system application in which Record Entry content attestation (signature event) occurred.	1784
	6. The system SHALL capture the type of Record Event trigger (i.e., attestation/signature event).	1785
	7. The system SHALL capture the date and time of Record Entry content attestation (signature event).	1786
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content attestation (signature event) occurred.	1787
	9. The system SHALL capture the data, document or other identifier for attested Record Entry content.	1788
RI.1.1.5 Function View/Access Record Entry Content		1789
Statement: View/Access content of Record Entries (1 or more instances) **Description:** Occurs when Record Entry content is viewed or accessed.- Viewed Record Entry content is the responsibility of authorized User(s).- An Audit Trigger is initiated to track Record Entry views and access.Reference: ISO 21089, Section 12.5.		
	1. The system MAY mask Record Entry content to access by authorized entities.	1790
	2. The system SHALL provide the ability to render Record Entry content, including original version and any subsequent amendments.	1791
	3. The system SHALL provide the ability to render Record Entry content down to the discrete element or item, including encoded fields.	1792
RI.1.1.5.1 Function Evidence of Record Entry View/ Access Event		1793
Statement: Maintain Evidence of Record Entry View/Access Event **Description:** Evidence of Record Entry View/Access Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHALL audit each occurrence when Record Entry content is viewed/accessed.	1794
	2. The system SHALL capture identity of the organization where Record Entry content is viewed/ accessed.	1795
	3. The system SHALL capture identity of the patient who is subject of the viewed/accessed Record Entry content.	1796
	4. The system SHALL capture identity of the user who viewed/accessed Record Entry content.	1797
	5. The system SHALL capture identity of the system application in which Record Entry content is viewed/accessed.	1798
	6. The system SHALL capture the type of Record Event trigger (i.e., view/access).	1799
	7. The system SHALL capture the date and time Record Entry content is viewed/accessed.	1800
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is viewed/accessed.	1801
	9. The system MAY capture the rationale for viewing/accessing Record Entry content (e.g., emergency access).	1802
	10. The system SHALL capture the data, document or other identifier for the viewed/accessed Record Entry content.	1803
	11. The system MAY capture whether the data/document viewed/accessed is a primary source record (e.g., patient's record) or an aggregated report (e.g., summary report including multiple patients).	1804
	12. The system SHALL capture when a Record Entry content view/access occurrence is known to be a disclosure, according to scope of practice, organizational policy, and/or jurisdictional law.	1805

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	13. The system SHOULD capture known and applicable permissions regarding Record Entry content viewed/accessed including confidentiality codes, patient consent authorizations, privacy policy pointers.	1806
RI.1.1.6 Function Output/Report Record Entry Content		1807
Statement: Output/Report content of Record Entries (1 or more instances) **Description:** Occurs when Record Entry content is output or reported. - Output/reported Record Entry content is the responsibility of authorized User(s). - An Audit Trigger is initiated to track Record Entry content outputs and reports. Reference: ISO 21089, Section 12.5.		
	1. The system SHOULD provide the ability to output/report Record Entry content, retaining original, unaltered content and signature bindings, Action and Record Entry provenance and metadata.	1808
	2. The system SHALL provide the ability to output/report Record Entry extracts, including content, context, provenance and metadata.	1809
	3. The system SHALL identify the patient or individual subject of output/reported Record Entry content.	1810
	4. IF a specific recipient is known, THEN the system SHOULD output/report protected Record Entry content based on established permissions and according to scope of practice, organizational policy, and/or jurisdictional law.	1811
	5. IF known and explicit as to Record Entry content being output/reported, THEN the system SHOULD transmit corresponding authorizations and patient consent permissions.	1812
	6. The system SHALL conform to function TI.1.6 (Secure Data Exchange).	1813
	7. The system SHALL provide the ability to extract Record Entry content prior to output/report, conforming to function RI.1.1.13 (Extract Record Entry Content).	1814
	8. The system SHALL provide the ability to de-identify Record Entry content prior to output/report, conforming to function RI.1.1.10 (De-Identify Record Entries).	1815
	9. The system SHALL provide the ability to output/report updates (new versions) of Record Entry Content to known recipients of prior versions according to scope of practice, organizational policy, and/or jurisdictional law.	1816
RI.1.1.6.1 Function Evidence of Record Entry Output/Report Event		1817
Statement: Maintain Evidence of Record Entry Output/Report Event **Description:** Evidence of Record Entry Output/Report Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHALL audit each occurrence when an output (e.g., report, screen shot) is generated from Record Entry content.	1818
	2. The system SHALL capture identity of the organization where output/report is generated from Record Entry content.	1819
	3. The system SHALL capture identity of the patient who is subject of the Record Entry(ies) populating the output/report generated.	1820
	4. The system SHALL capture identity of the user who generated the output/report of Record Entry content.	1821
	5. The system SHALL capture identity of the system application from which the output/report is generated.	1822
	6. The system SHALL capture the type of Record Event trigger (i.e., output/report).	1823
	7. The system SHALL capture the date and time the output/report is generated.	1824
	8. The system SHOULD capture identity of the location (i.e., network address) where the output/report is generated.	1825
	9. The system MAY capture the rationale for generating the output/report.	1826
	10. The system MAY capture the data, document, or other identifier for the output/report generated.	1827
	11. The system SHALL capture when a Record Entry content output/report occurrence is known to be a disclosure, according to scope of practice, organizational policy, and/or jurisdictional law.	1828
	12. The system SHOULD capture known and applicable permissions regarding Record Entry content output/reported including confidentiality codes, patient consent authorizations, privacy policy pointers.	1829
RI.1.1.7 Function Disclose Record Entry Content		1830
Statement: Disclose content of Record Entries		

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	Description: Occurs when Record Entry content is disclosed according to scope of practice, organizational policy or jurisdictional law.- Disclosed Record Entry content is the responsibility of authorized User(s).- An Audit Trigger is initiated to track Record Entry content disclosures.Reference: ISO 21089, Section 12.5.	
	1. The system SHALL identify the patient or individual subject of transmitted/disclosed Record Entry content.	1831
	2. The system SHALL capture a log entry for disclosure of protected Record Entry content, according to scope of practice, organizational policy, and/or jurisdictional law.	1832
	3. IF a specific recipient is known, THEN the system SHOULD disclose protected Record Entry content based on established permissions and according to scope of practice, organizational policy, and/or jurisdictional law.	1833
	4. IF known and explicit as to Record Entry content being transmitted, THEN the system SHOULD transmit corresponding authorizations and patient consent permissions.	1834
	5. The system SHALL conform to function TI.1.6 (Secure Data Exchange).	1835
	6. The system SHALL provide the ability to extract Record Entry content prior to disclosure, conforming to function RI.1.1.13 (Extract Record Entry Content).	1836
	7. The system SHALL provide the ability to de-identify Record Entry content prior to disclosure, conforming to function RI.1.1.10 (De-Identify Record Entries).	1837
RI.1.1.7.1 Function Evidence of Record Entry Disclosure Event		1838
	Statement: Maintain Evidence of Record Entry Disclosure Event **Description:** Evidence of Record Entry Disclosure Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when Record Entry content is disclosed according to scope of practice, organizational policy, and/or jurisdictional law.	1839
	2. The system SHALL capture identity of the organization from which Record Entry content is disclosed.	1840
	3. The system SHALL capture identity of the patient who is subject of Record Entry content disclosed.	1841
	4. The system SHALL capture identity of the user initiating disclosure of Record Entry content.	1842
	5. The system SHALL capture identity of the system application from which Record Entry content is disclosed.	1843
	6. The system SHALL capture the type of Record Event trigger (i.e., disclose).	1844
	7. The system SHALL capture the date and time Record Entry content is disclosed.	1845
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is disclosed.	1846
	9. The system SHOULD capture the rationale for disclosing Record Entry content.	1847
	10. The system MAY capture the data, document or other identifier for Record Entry content disclosed.	1848
	11. The system SHALL capture that this is an occurrence when Record Entry content is known to be disclosed, according to scope of practice, organizational policy, and/or jurisdictional law.	1849
	12. The system SHOULD capture known and applicable permissions regarding Record Entry content disclosed including confidentiality codes, patient consent authorizations, privacy policy pointers.	1850
RI.1.1.8 Function Transmit Record Entry Content		1851
	Statement: Transmit content of Record Entries (1 or more instances) **Description:** Occurs when Record Entry content is transmitted – typically to an external entity or system.- Transmittal may include original Record Entry content with subsequent amendment(s), if any.- Transmittal of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry transmittal.Reference: ISO 21089, Section 12.8.1.	
	1. The system SHOULD provide the ability to transmit Record Entry content to external systems, retaining original, unaltered content and signature bindings, Action and Record Entry provenance and metadata.	1852
	2. The system SHALL provide the ability to transmit Record Entry extracts to external systems, including content, context, provenance and metadata.	1853
	3. The system SHALL identify the patient or individual subject of transmitted Record Entry content.	1854
	4. IF a specific recipient is known, THEN the system SHOULD transmit protected Record Entry content based on established permissions and according to scope of practice, organizational policy, and/or jurisdictional law.	1855
	5. IF known and explicit as to Record Entry content being transmitted, THEN the system SHOULD transmit corresponding authorizations and patient consent permissions.	1856
	6. The system SHALL conform to function TI.1.6 (Secure Data Exchange).	1857
	7. The system SHALL provide the ability to extract Record Entry content prior to transmittal, conforming to function RI.1.1.13 (Extract Record Entry Content).	1858

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	8. The system SHALL provide the ability to de-identify Record Entry content prior to transmittal, conforming to function RI.1.1.10 (De-Identify Record Entries).	1859
	9. The system SHALL provide the ability to transmit updates (new versions) of Record Entry Content to known recipients of prior versions according to scope of practice, organizational policy, and/or jurisdictional law.	1860
	10. The system SHALL provide the ability to transmit with each exchange the most recent or all versions of Record Entry Content according to scope of practice, organizational policy, and/or jurisdictional law.	1861
RI.1.1.8.1 Function Evidence of Record Entry Transmit Event		1862
Statement: Maintain Evidence of Record Entry Transmit Event **Description:** Evidence of Record Entry Transmit Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHALL audit each occurrence when Record Entry content is transmitted.	1863
	2. The system SHALL capture identity of the organization from which Record Entry content is transmitted.	1864
	3. The system SHALL capture identity of the patient who is subject of Record Entry content transmitted.	1865
	4. The system SHALL capture identity of the user initiating transmission of Record Entry content.	1866
	5. The system SHALL capture identity of the system application which transmitted Record Entry content.	1867
	6. The system SHALL capture identity of the system application which received Record Entry content.	1868
	7. The system SHALL capture the type of Record Event trigger (i.e., transmit).	1869
	8. The system SHALL capture the date and time Record Entry content is transmitted.	1870
	9. The system SHOULD capture identity of the location (i.e., network address) from which the Record Entry is transmitted/disclosed.	1871
	10. The system SHALL capture the location (network address) to which the Record Entry is transmitted/ disclosed.	1872
	11. The system MAY capture the rationale for transmitting Record Entry content.	1873
	12. The system SHALL capture the type of Record Entry content transmitted/disclosed (e.g., original, amended, updated data).	1874
	13. The system MAY capture the data, document or other identifier for transmitted/disclosed Record Entry.	1875
	14. The system MAY capture data elements for transmitted/disclosed Record Entry.	1876
	15. The system SHALL capture when a Record Entry transmit occurrence is known to be a disclosure, according to scope of practice, organizational policy, and/or jurisdictional law.	1877
	16. The system SHOULD capture known and applicable permissions regarding Record Entry content transmitted including confidentiality codes, patient consent authorizations, privacy policy pointers.	1878
RI.1.1.9 Function Receive and Retain Record Entries		1879
Statement: Receive and retain/persist content of Record Entries (1 or more instances) **Description:** Occurs when Record Entry content is received – typically from an external system.- Receipt of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry receipt and retention.Reference: ISO 21089, Section 12.8.1.		
	1. The system SHOULD provide the ability to capture and maintain Record Entry content from external systems, retaining and persisting original unaltered content and signature bindings, Action and Record Entry provenance and metadata.	1880
	2. The system SHALL provide the ability to capture and maintain Record Entry extracts from external systems, retaining and persisting source, identity, record content, corresponding provenance and metadata.	1881
	3. The system SHALL identify the patient or individual subject of received Record Entry content.	1882
	4. IF received with Record Entry content, THEN the system SHOULD control subsequent data access to that permitted by corresponding authorizations and patient consents.	1883
RI.1.1.9.1 Function Evidence of Record Entry Receive/Retain Event		1884
Statement: Maintain Evidence of Record Entry Receive/Retain Event		

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	Description: Evidence of Record Entry Receive/Retain Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when externally-sourced Record Entry content is received and retained.	1885
	2. The system SHALL capture identity of the organization transmitting Record Entry content received and retained.	1886
	3. The system SHALL capture identity of the organization receiving transmitted Record Entry content.	1887
	4. The system SHALL capture identity of the patient who is subject of received Record Entry content.	1888
	5. IF the system supports user verification of receipt of externally-sourced Record Entry content, THEN the system SHALL capture identity of the user accepting receipt of the transmitted Record Entry content.	1889
	6. The system SHALL capture identity of the system application which transmitted Record Entry content.	1890
	7. The system SHALL capture identity of the system application which received Record Entry content.	1891
	8. The system SHALL capture the type of Record Event trigger (i.e., receive).	1892
	9. The system SHALL capture the date and time Record Entry content is received.	1893
	10. The system SHOULD capture identity of the location (i.e., network address) where the Record Entry content is received.	1894
	11. The system MAY capture the rationale for accepting receipt of transmitted Record Entry content.	1895
	12. The system SHALL capture the type of Record Entry content received (e.g., original, amended, updated data).	1896
	13. IF an internal identifier is assigned to data/documents received from an external source, THEN the system MAY capture the data, document or other identifier for the Record Entry received.	1897
	14. The system MAY capture data elements for the Record Entry received.	1898
RI.1.1.10 Function De-identify Record Entries		1899
	Statement: De-identify content of Record Entries (1 or more instances) **Description:** Occurs when Record Entry content is transformed into de-identified version.- De-identification of Record Entries may be initiated by User command.- De-identification of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry de-identification.Reference: ISO 21089, Section 12.6.1.	
	1. The system SHALL provide the ability to de-identify Record Entry content according to scope of practice, organizational policy, and/or jurisdictional law.	1900
RI.1.1.10.1 Function Evidence of Record Entry De-Identification Event		1901
	Statement: Maintain Evidence of Record Entry De-Identification Event **Description:** Evidence of Record Entry De-Identification Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when Record Entry content is de-identified.	1902
	2. The system SHALL capture identity of the organization where Record Entry content is de-identified.	1903
	3. The system SHALL capture identity of the patient who is subject of de-identified Record Entry content.	1904
	4. The system SHALL capture identity of the user de-identifying Record Entry content.	1905
	5. The system SHALL capture identity of the system application which de-identified Record Entry content.	1906
	6. The system SHALL capture the type of Record Event trigger (i.e., de-identify).	1907
	7. The system SHALL capture the date and time Record Entry content is de-identified.	1908
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is de-identified.	1909
	9. The system MAY capture the rationale for de-identifying Record Entry content.	1910
	10. The system MAY capture the data, document or other identifier for de-identified Record Entry content.	1911
RI.1.1.11 Function Pseudomynize Record Entries		1912
	Statement: Provide pseudomynized identity for Record Entries (1 or more instances) **Description:** Occurs when Record Entry is transformed into an pseudomynized version.- Pseudomynization allows records to be later re-identified.- Pseudomynization of Record Entries may be initiated by User command.- Pseudomynization of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry pseudomynization.Reference: ISO 21089, Section 12.6.1.	

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	1. The system SHALL provide the ability to pseudomynize (or associate new identity with) patient Record Entries according to scope of practice, organizational policy, and/or jurisdictional law.	1913
RI.1.1.11.1 Function Evidence of Record Entry Pseudomynization Event		1914
Statement: Maintain Evidence of Record Entry Pseudomynization Event **Description:** Evidence of Record Entry Pseudomynization Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHALL audit each occurrence when a Record Entry content is pseudomynized.	1915
	2. The system SHALL capture identity of the organization where Record Entry content is pseudomynized.	1916
	3. The system SHALL capture identity of the patient who is subject of pseudomynized Record Entry content.	1917
	4. The system SHALL capture identity of the user pseudomynizing Record Entry content.	1918
	5. The system SHALL capture identity of the system application which pseudomynized Record Entry content.	1919
	6. The system SHALL capture the type of Record Event trigger (i.e., pseudomynize).	1920
	7. The system SHALL capture the date and time Record Entry content is pseudomynized.	1921
	8. The system SHOULD capture identity of the location (i.e., network address) where the Record Entry content is pseudomynized.	1922
	9. The system MAY capture the rationale for pseudomynizing Record Entry content.	1923
RI.1.1.12 Function Re-identify Record Entries		1924
Statement: Re-identify previously aliased identity for content of Record Entries (1 or more instances) **Description:** Occurs when Record Entries are re-identified from a previously aliased version.- Re-identification of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry re-identification.Reference: ISO 21089, Section 12.6.2.		
	1. The system SHALL provide the ability to re-identify (or associate original identity with) Record Entry content according to scope of practice, organizational policy, and/or jurisdictional law.	1925
RI.1.1.12.1 Function Evidence of Record Entry Re-Identification Event		1926
Statement: Maintain Evidence of Record Entry Re-Identification Event **Description:** Evidence of Record Entry Re-Identification Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHALL audit each occurrence when Record Entry content is re-identified.	1927
	2. The system SHALL capture identity of the organization where Record Entry content is re-identified.	1928
	3. The system SHALL capture identity of the patient who is subject of re-identified Record Entry content.	1929
	4. The system SHALL capture identity of the user re-identifying Record Entry content.	1930
	5. The system SHALL capture identity of the system application which re-identified Record Entry content.	1931
	6. The system SHALL capture the type of Record Event trigger (i.e., re-identify).	1932
	7. The system SHALL capture the date and time Record Entry content is re-identified.	1933
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is re-identified.	1934
	9. The system MAY capture the rationale for re-identifying Record Entry content.	1935
RI.1.1.13 Function Extract Record Entry Content		1936
Statement: Extract Record Entry content to produce subsets, derivations, summaries or aggregations (Multiple instances) **Description:** Occurs when Record Entry content is extracted to render subsets, derivations, summaries or aggregations. - Extraction of Record Entry content may be initiated by User command, and/or rules-based algorithm. - Extraction of Record Entry content is the responsibility of the System – which invokes relevant rules. - An Audit Trigger is initiated to track Record Entry content extraction. Reference: ISO 21089, Section 12.7. An EHR-S enables an authorized user, such as a clinician, to access and aggregate the distributed information, which corresponds to the health record or records that are needed for viewing, reporting, disclosure, etc. An EHR-S must support data extraction operations across the complete data set that constitutes the health record of an individual and provide an output that fully chronicles the healthcare process. Data extractions are used as input		

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	to patient care coordination between facilities, organizations and settings. In addition, data extractions can be used for administrative, financial, research, quality analysis, public health purposes, and to enable re-creation of copies for importing into different EHR applications and enable the archiving of patients' data. Data may be extracted in order to meet analysis and reporting requirements. The extracted data may require use of more than one application and it may be pre-processed (for example, by being de-identified) before transmission. Data extractions may be used to exchange data and provide reports for primary and ancillary purposes.	
	1. The system SHALL provide the ability to extract Record Entry content to produce subsets, derivations, summaries or aggregations according to scope of practice, organizational policy, and/ or jurisdictional law.	1937
	2. The system SHALL provide the ability to de-identify Record Entries during extraction in accordance with function RI.1.1.10 (De-Identify Record Entries).	1938
	3. The system SHALL provide the ability to extract Record Entry content based on queries with selection criteria, for example, key words, date/time range, full text search.	1939
	4. The system SHALL provide the ability to extract metadata associated with Record Entry content.	1940
	5. The system SHOULD provide the ability to extract, with parameterized selection criteria, across the complete data set that constitutes all Record Entries for a patient.	1941
	6. The system SHOULD provide the ability to extract and present a full chronicle of the healthcare process from assembled Record Entries.	1942
	7. The system SHOULD provide the ability to extract and present a full chronicle of healthcare delivered to a patient from assembled Record Entries.	1943
	8. The system SHALL provide the ability to extract Record Entry content for various purposes, including administrative, financial, research, quality analysis and public health.	1944
	9. The system SHOULD provide the ability to extract Record Entries for system migration.	1945
	10. The system SHOULD provide the ability to manage a set of over-riding parameters to exclude sensitive or privileged Record Entry content from extraction.	1946
	11. The system MAY provide the ability to extract unstructured Record Entry content and convert it into structured data.	1947
RI.1.1.13.1 Function Evidence of Record Entry Extraction Event		1948
	Statement: Maintain Evidence of Record Entry Extraction Event **Description:** Evidence of Record Entry Extraction Events includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when Record Entry content is extracted.	1949
	2. The system SHALL capture identity of the organization where Record Entry content is extracted.	1950
	3. The system SHALL capture identity of the patient who is subject of extracted Record Entry content.	1951
	4. The system SHALL capture identity of the user extracting Record Entry content.	1952
	5. The system SHALL capture identity of the system application which extracted Record Entry content.	1953
	6. The system SHALL capture the type of Record Event trigger (i.e., extract).	1954
	7. The system SHALL capture the date and time Record Entry content is extracted.	1955
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is extracted.	1956
	9. The system MAY capture the rationale for extracting Record Entry content.	1957
RI.1.1.14 Function Archive Record Entries		1958
	Statement: Archive Record Entries (1 or more instances) **Description:** Occurs when Record Entries are archived – typically to off-line (less readily available) storage media.- Archival of Record Entries may be initiated by User command.- Archival of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry archival.Reference: ISO 21089, Section 12.10.	
	1. The system SHALL archive Record Entries according to function RI.3 (Manage Record Archive and Restore).	1961
RI.1.1.14.1 Function Evidence of Record Entry Archive Event		1962
	Statement: Maintain Evidence of Record Entry Archive Event **Description:** Evidence of Record Entry Archive Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when Record Entry content is archived.	1963
	2. The system SHALL capture identity of the organization where Record Entry content is archived.	1964

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	3. The system SHALL capture identity of the patient who is subject of archived Record Entry content.	1965
	4. The system SHALL capture an archive identifier for archived Record Entry content (e.g., nursing home inpatient stay from 3/15/2000 thru 6/10/2000).	1966
	5. The system SHALL capture identity of the user archiving Record Entry content.	1967
	6. The system SHALL capture identity of the system application which archived Record Entry content.	1968
	7. The system SHALL capture the type of Record Event trigger (i.e., archive).	1969
	8. The system SHALL capture the date and time Record Entry content is archived.	1970
	9. The system SHOULD capture identity of the location (i.e., network address) to which Record Entry content is archived.	1971
	10. The system MAY capture the rationale for archiving Record Entry content.	1972
	11. The system SHALL capture the set of Record Entry content to be archived.	1973
	12. The system MAY capture the data, document or other identifier for archived Record Entry content.	1974
	13. The system SHOULD capture the method and target media of archived Record Entry content.	1975
RI.1.1.15 Function Restore (previously archived) Record Entries		1976

Statement: Restore previously archived Record Entries (1 or more instances)

Description: Occurs when Record Entries are restored from archive. - Restore of Record Entries may be initiated by User command. - Restoration of Record Entries is the responsibility of the System – which invokes relevant rules. - An Audit Trigger is initiated to track Record Entry restoration.Reference: ISO 21089, Section 12.10.

	1. The system SHALL provide the ability to restore (previously archived) Record Entries according to scope of practice, organizational policy, and/or jurisdictional law.	1977
RI.1.1.15.1 Function Evidence of Record Entry Restore Event		1978

Statement: Maintain Evidence of Record Entry Restore Event

Description: Evidence of Record Entry Restore Event includes key metadata, ensures health record integrity (and trust) and enables record audit.

	1. The system SHALL audit each occurrence when archived Record Entry content is restored.	1979
	2. The system SHALL capture identity of the organization where Record Entry content is restored.	1980
	3. The system SHALL capture identity of the patient who is subject of restored Record Entry content.	1981
	4. The system SHALL capture an archive identifier for restored Record Entry content (e.g., nursing home inpatient stay from 3/15/2000 thru 6/10/2000).	1982
	5. The system SHALL capture identity of the user restoring Record Entry content.	1983
	6. The system SHALL capture identity of the system application which restored Record Entry content.	1984
	7. The system SHALL capture the type of Record Event trigger (i.e., restore).	1985
	8. The system SHALL capture the date and time Record Entry content is restored.	1986
	9. The system SHOULD capture identity of the location (i.e., network address) from which Record Entry content is restored.	1987
	10. The system MAY capture the rationale for restoring Record Entry content.	1988
	11. The system MAY capture the data, document or other identifier for restored Record Entry content.	1989
RI.1.1.16 Function Destroy or Identify Record Entries as Missing		1990

Statement: Destroy or Identify Record Entries as Missing (1 or more instances)

Description: Occurs when Record Entries are destroyed or identified as missing.- Destruction typically occurs after conclusion of the legal retention period.- Destruction of Record Entries may be initiated by User command.- Destruction of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry Destruction or Notation as Missing.Reference: ISO 21089, Section 12.11.

	1. The system SHALL provide the ability to delete (destroy) Record Entries (e.g., those exceeding their legal retention period) according to scope of practice, organizational policy, and/or jurisdictional law.	1991
	2. The system SHALL provide the ability to tag Record Entries as missing.	1992
RI.1.1.16.1 Function Evidence of Record Entry Destruction Event		1993

Statement: Maintain Evidence of Record Entry Destruction Event

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Description: Evidence of Record Entry Destruction Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when Record Entry content is destroyed according to scope of practice, organizational policy, and/or jurisdictional law.	1994
	2. The system SHALL capture identity of the organization where Record Entry content is destroyed.	1995
	3. The system SHALL capture identity of the patient who is subject of destroyed Record Entry content.	1996
	4. The system SHALL capture a destruction identifier for destroyed Record Entry content (e.g., nursing home inpatient stay from 3/15/2000 thru 6/10/2000).	1997
	5. The system SHALL capture identity of the user destroying Record Entry content.	1998
	6. The system SHALL capture identity of the system application which destroyed Record Entry content.	1999
	7. The system SHALL capture the type of Record Event trigger (i.e., destroy).	2000
	8. The system SHALL capture the date and time Record Entry content is destroyed.	2001
	9. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is destroyed.	2002
	10. The system MAY capture the rationale for destroying Record Entry content.	2003
	11. The system MAY capture the data, document or other identifier for destroyed Record Entry content.	2004
	12. The system MAY capture data elements for Record Entry content de-identified.	2005
RI.1.1.17 Function Deprecate/Retract Record Entries		2006
	Statement: Deprecate/retract Record Entries as invalid (1 or more instances) **Description:** Occurs when Record Entries are deprecated if found to be improperly identified or otherwise invalid.- Deprecation of Record Entries may be initiated by User command.- Deprecation of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry Deprecation.	
	1. The system SHALL provide the ability to deprecate/retract Record Entries as invalid according to scope of practice, organizational policy, and/or jurisdictional law.	2007
RI.1.1.17.1 Function Evidence of Record Entry Deprecation/Retraction Event		2008
	Statement: Maintain Evidence of Record Entry Deprecation/Retraction Event **Description:** Evidence of Record Entry Deprecation/Retraction Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when Record Entry content is deprecated/retracted.	2009
	2. The system SHALL capture identity of the organization where Record Entry content is deprecated/ retracted.	2010
	3. The system SHALL capture identity of the patient who is subject of deprecated/retracted Record Entry content.	2011
	4. The system SHALL capture identity of the user deprecating/retracting Record Entry content.	2012
	5. The system SHALL capture identity of the system application which deprecated/retracted Record Entry content.	2013
	6. The system SHALL capture the type of Record Event trigger (i.e., deprecate/retract).	2014
	7. The system SHALL capture the date and time Record Entry content is deprecated/retracted.	2015
	8. The system SHALL capture identity of the location (i.e., network address) where Record Entry content is deprecated/retracted.	2016
	9. The system MAY capture the rationale for deprecating/retracting Record Entry content.	2017
RI.1.1.18 Function Re-Activate Record Entries		2018
	Statement: Re-activate Record Entries (1 or more instances) **Description:** Occurs when Record Entries are made active again after previously Destroy or Deprecate.- Re-activation of Record Entries may be initiated by User command.- Re-activation of Record Entries is the responsibility of the System – which invokes relevant rules.- An Audit Trigger is initiated to track Record Entry Re-Activation.	
	1. The system SHALL provide the ability to re-activate (previously deleted or deprecated) Record Entries according to scope of practice, organizational policy, and/or jurisdictional law.	2019
RI.1.1.18.1 Function Evidence of Record Entry Re-Activation Event		2020
	Statement: Maintain Evidence of Record Entry Re-Activation Event	

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Description: Evidence of Record Entry Re-Activation Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when destroyed or deprecated Record Entry content is re-activated.	2021
	2. The system SHALL capture identity of the organization where Record Entry content is reactivated.	2022
	3. The system SHALL capture identity of the patient who is subject of reactivated Record Entry content.	2023
	4. The system SHALL capture identity of the user reactivating Record Entry content.	2024
	5. The system SHALL capture identity of the system application which re-activated Record Entry content.	2025
	6. The system SHALL capture the type of Record Event trigger (i.e., re-activate).	2026
	7. The system SHALL capture the date and time Record Entry content is re-activated.	2027
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entry content is re-activated.	2028
	9. The system MAY capture the rationale for re-activating Record Entry content.	2029
RI.1.1.19 Function Merge Record Entries		2030
	Statement: Merge Record Entries (2 or more instances) **Description:** Occurs when Record Entries are merged together. - Entries may be merged if duplicate patient records are found.	
	1. The system SHALL provide the ability to logically merge patient Record Entries according to scope of practice, organizational policy, and/or jurisdictional law.	2031
RI.1.1.19.1 Function Evidence of Record Entry Merge Event		2032
	Statement: Maintain Evidence of Record Entry Merge Event **Description:** Evidence of Record Entry Merge Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when Record Entries are merged (e.g., same patient, multiple sets of record entries).	2033
	2. The system SHALL capture identity of the organization where Record Entries are merged.	2034
	3. The system SHALL capture identity of the patient who is subject of merged Record Entries.	2035
	4. The system SHALL capture the identifier for the source set of Record Entries.	2036
	5. The system SHALL capture the identifier for the target set of Record Entries.	2037
	6. The system SHALL capture identity of the user merging Record Entries.	2038
	7. The system SHALL capture identity of the system application which merged Record Entries.	2039
	8. The system SHALL capture the type of Record Event trigger (i.e., merge).	2040
	9. The system SHALL capture the date and time Record Entries are merged.	2041
	10. The system SHALL capture identity of the location (i.e., network address) where Record Entries are merged.	2042
	11. The system MAY capture the rationale for merging Record Entries.	2043
	12. The system MAY capture the data, document or other identifier for merged Record Entries.	2044
RI.1.1.20 Function Unmerge Record Entries		2045
	Statement: Unmerge previously merged Record Entries (2 or more instances) **Description:** Occurs when Record Entries must be unmerged from previous merge, as in RI.1.1.16.	
	1. The system SHALL provide the ability to unmerge multiple patient Record Entries according to scope of practice, organizational policy, and/or jurisdictional law.	2046
RI.1.1.20.1 Function Evidence of Record Entry Unmerge Event		2047
	Statement: Maintain Evidence of Record Entry Unmerge Event **Description:** Evidence of Record Entry Unmerge Event includes key metadata, ensures health record integrity (and trust) and enables record audit.	
	1. The system SHALL audit each occurrence when merged Record Entries are unmerged.	2048
	2. The system SHALL capture identity of the organization where Record Entries are unmerged.	2049
	3. The system SHALL capture identity of the patient who is subject of unmerged Record Entries.	2050

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	4. The system SHALL capture the identifier for the source set of Record Entries.	2051
	5. The system SHALL capture the identifier for the target set of Record Entries.	2052
	6. The system SHALL capture identity of the user unmerging Record Entries.	2053
	7. The system SHALL capture identity of the system application which unmerged Record Entries.	2054
	8. The system SHALL capture the type of Record Event trigger (i.e., unmerge).	2055
	9. The system SHALL capture the date and time Record Entries are unmerged.	2056
	10. The system SHOULD capture identity of the location (i.e., network address) where Record Entries are unmerged.	2057
	11. The system MAY capture the rationale for unmerging Record Entries.	2058
	12. The system MAY capture the data, document or other identifier for unmerged Record Entries.	2059
RI.1.1.21 Function Link Record Entries		2060
Statement: Link Record Entries (2 or more instances) **Description:** Occurs when Record Entries are linked together. - Entries may be linked for a single an encounter (patient visit)- Entries may be linked for an episode (patient problem)- Entries may be linked for a selected population cohort		
	1. The system SHALL provide the ability to logically link patient Record Entries according to scope of practice, organizational policy, and/or jurisdictional law.	2061
RI.1.1.21.1 Function Evidence of Record Entry Link Event		2062
Statement: Maintain Evidence of Record Entry Link Event **Description:** Evidence of Record Entry Link Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHOULD audit each occurrence when Record Entries are linked to another entry/object (e.g., Record Entries in an external system).	2063
	2. The system SHOULD capture identity of the organization where Record Entries are linked.	2064
	3. The system SHOULD capture identity of the patient who is subject of linked Record Entries.	2065
	4. The system SHOULD capture identity of the user linking Record Entries.	2066
	5. The system SHOULD capture identity of the system application which linked Record Entries.	2067
	6. The system SHOULD capture the type of Record Event trigger (i.e., link).	2068
	7. The system SHOULD capture the date and time Record Entries are linked.	2069
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entries are linked.	2070
	9. The system MAY capture the rationale for linking Record Entries.	2071
RI.1.1.22 Function Unlink Record Entries		2072
Statement: Unlink previously linked Record Entries (2 or more instances) **Description:** Occurs when Record Entries must be unlinked from previous linkage, as in RI.1.1.18.		
	1. The system SHALL provide the ability to unlink multiple patient Record Entries according to scope of practice, organizational policy, and/or jurisdictional law.	2073
RI.1.1.22.1 Function Evidence of Record Entry Unlink Event		2074
Statement: Maintain Evidence of Record Entry Unlink Event **Description:** Evidence of Record Entry Unlink Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHOULD audit each occurrence when linked Record Entries are unlinked from another entry/object.	2075
	2. The system SHOULD capture identity of the organization where Record Entries are unlinked.	2076
	3. The system SHOULD capture identity of the patient who is subject of un-linked Record Entry.	2077
	4. The system SHOULD capture identity of the user unlinking Record Entries.	2078
	5. The system SHOULD capture identity of the system application which unlinked Record Entries.	2079
	6. The system SHOULD capture the type of Record Event trigger (i.e., unlink).	2080
	7. The system SHOULD capture the date and time Record Entries are unlinked.	2081

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	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entries are unlinked.	2082
	9. The system MAY capture the rationale for unlinking Record Entries.	2083
RI.1.1.23 Function Place Record Entries on Legal Hold		2084
Statement: Hold Record Entries in an unaltered state for legal hold period (1 or more instances) **Description:** Occurs when Record Entries must be marked (and held in an unaltered state) for purposes of a legal hold (typically as the result of court or legal action).		
	1. The system SHALL provide the ability to manage a specified set of patient Record Entries during period of legal hold, marking as to on hold status and preventing alteration according to scope of practice, organizational policy, and/or jurisdictional law.	2085
RI.1.1.23.1 Function Evidence of Record Entry Legal Hold Event		2086
Statement: Maintain Evidence of Record Entry Legal Hold Event **Description:** Evidence of Record Entry Legal Hold Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHOULD audit each occurrence when a set of Record Entries are placed on legal hold.	2087
	2. The system SHOULD capture identity of the organization where Record Entries are placed on legal hold.	2088
	3. The system SHOULD capture identity of the patient who is subject of Record Entries placed on legal hold.	2089
	4. The system SHOULD capture the identifier for the set of Record Entries placed on legal hold.	2090
	5. The system SHOULD capture identity of the user placing Record Entries on legal hold.	2091
	6. The system SHOULD capture identity of the system application which placed Record Entries on legal hold.	2092
	7. The system SHOULD capture the type of Record Event trigger (i.e., placed on legal hold).	2093
	8. The system SHOULD capture the date and time Record Entries are placed on legal hold.	2094
	9. The system SHOULD capture identity of the location (i.e., network address) from which Record Entries are placed on legal hold.	2095
	10. The system MAY capture identity of the location (i.e., network address) in which Record Entries on legal hold are placed.	2096
	11. The system MAY capture the rationale for placing Record Entries on legal hold.	2097
	12. The system MAY capture the data, document or other identifier for Record Entries placed on legal hold.	2098
RI.1.1.24 Function Release Record Entries from Legal Hold		2099
Statement: Release legal hold on Record Entries (1 or more instances) **Description:** Occurs when Record Entries are released from legal hold (previously marked and held in unaltered state), as in RI.1.1.20.		
	1. The system SHALL provide the ability to release patient Record Entries from legal hold status according to scope of practice, organizational policy, and/or jurisdictional law.	2100
RI.1.1.24.1 Function Evidence of Record Entry Legal Hold Removal Event		2101
Statement: Maintain Evidence of Record Entry Legal Hold Removal Event **Description:** Evidence of Record Entry Legal Hold Removal Event includes key metadata, ensures health record integrity (and trust) and enables record audit.		
	1. The system SHOULD audit each occurrence when a set of Record Entries are released from legal hold.	2102
	2. The system SHOULD capture identity of the organization where Record Entries are released from legal hold.	2103
	3. The system SHALL capture identity of the patient who is subject of Record Entries released from legal hold.	2104
	4. The system SHALL capture identity of the user releasing Record Entries from legal hold.	2105

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	5. The system SHALL capture identity of the system application which released Record Entries from legal hold.	2106
	6. The system SHOULD capture the type of Record Event trigger (i.e., released from legal hold).	2107
	7. The system SHALL capture the date and time Record Entries are released from legal hold.	2108
	8. The system SHOULD capture identity of the location (i.e., network address) where Record Entries are released from legal hold.	2109
	9. The system MAY capture the rationale for releasing Record Entries from legal hold.	2110
RI.1.2 Header Record Lifespan		2111
Statement: Manage Record Lifespan **Description:** Record Lifecycle Events (Section RI.1.1) are those required to manage Record Entries in persistent storage over the full course of Record Lifespan (Section RI.1.2). See Section RI.1.1, Record Lifecycle, for further description.		
RI.1.2.1 Function Manage Record Entries		2112
Statement: Manage/Persist Record Entries (Multiple instances) **Description:** Occurs upon Record Entry origination/retention and thereafter on a continuous and uninterrupted basis for lifespan of each Record Entry.- Ensures long-term retention and preservation of EHR Record Entries, without alteration.Reference: ISO 21089, Section 12.2.2		
	1. The system SHALL manage each Record Entry as a persistent, indelible (unalterable) data object, including its revision history.	2113
	2. The system SHALL manage (persist) each Record Entry for its applicable retention period according to scope of practice, organizational policy, and/or jurisdictional law.	2114
	3. The system SHALL manage (persist) the full set of identity, event and provenance Audit Metadata for each Record Entry, conforming to lifecycle events in function RI.1.1 (Record Lifecycle) and metadata requirements in function TI.2.1.1 (Record Entry Audit Triggers).	2115
	4. The system SHALL manage (persist) the attestation/signature event (e.g., digital signature) of each Record Entry conforming to function RI.1.1.4 (Attest Record Entry Content).	2116
	5. The system SHALL manage Record Entries with data content in standard and non-standard formats.	2117
	6. The system SHALL manage Record Entries containing both structured and unstructured data.	2118
	7. The system SHOULD manage Record Entry content with tagged or delimited elements including data formatted as text, documents, images, audio, waveforms, in ASCII, binary and other encodings.	2119
	8. The system SHOULD manage Record Entries in clinical and business contexts.	2120
	9. The system SHOULD provide the ability to manage sets of clinical and business context data, to be captured in or linked to Record Entries.	2121
	10. The system SHOULD provide the ability to extract all available elements included in the definition of a legal medical record (including Audit Log Entries and the decoded translation of anything stored only in code form) according to scope of practice, organizational policy, and/or jurisdictional law.	2122
	11. The system MAY provide the ability to tag specific Record Entries for deletion according to scope of practice, organizational policy, and/or jurisdictional law.	2123
	12. IF allowing tags for specific Record Entry deletion, THEN the system SHALL provide the ability to manage the set of tagged Entries, allowing review and confirmation before actual deletion occurs according to scope of practice, organizational policy, and/or jurisdictional law.	2124
	13. IF allowing tags for specific Record Entry deletion, THEN the system SHALL provide the ability to delete Entries according to scope of practice, organizational policy, and/or jurisdictional law.	2125
	14. IF allowing tags for specific Record Entry deletion, THEN the system SHALL provide the ability to render confirming notification that the destruction occurred according to scope of practice, organizational policy, and/or jurisdictional law.	2126
	15. The system MAY provide the ability to undelete Record Entries according to scope of practice, organizational policy, and/or jurisdictional law.	2127
	16. The system MAY transmit record destruction date information along with existing data when transmitting Record Entries (or extracts) to another entity.	2128
	17. The system SHOULD manage health care information for organizations that have multiple facilities according to scope of practice, organizational policy, and/or jurisdictional law.	2129
	18. The system MAY tag and render patient information that has been not been previously presented to the clinician.	2130
	19. IF the system tags patient information from internal or external systems that has not been previously presented to the clinician, THEN the system MAY present a notification to that clinician in accordance with user role and according to scope of practice, organizational policy, and/or jurisdictional law.	2131
RI.1.2.2 Function		2132

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Manage Record Entries for Legal Hold		
	Statement: Manage/Preserve Record Entries for Legal Hold (Multiple instances) **Description:** Occurs when a set of Record Entries is designated to be held for legal purposes or proceedings. - Ensures preservation of a set of Record Entries for a designated time, held without alteration.	
	1. The system SHALL conform to function RI.1.1.23 (Place Record Entries on Legal Hold).	2133
	2. The system SHALL conform to function RI.1.1.24 (Release Record Entries from Legal Hold).	2134
	3. The system SHALL provide the ability to control access to data/records during legal hold, preventing un-auditable alteration or unauthorized use for preservation purposes.	2135
	4. The system SHALL provide the ability to maintain records beyond normal retention period according to scope of practice, organizational policy, and/or jurisdictional law.	2136
	5. The system SHOULD provide the ability to capture the reason for preserving records beyond the normal retention period.	2137
	6. The system SHOULD provide the ability to render a legal hold notice identifying who to contact for questions when a user attempts to alter a record on legal hold.	2138
	7. The system MAY provide the ability to render Record Entry content preserved for a legal hold by type, class or encounter (e.g., medical Record Entry or report, e-mail, metadata, etc.), conforming to function RI.1.1.13 (Extract Record Entry Content).	2139
RI.1.3 Header Record States		2140
	Statement: Manage Record States **Description:** Record Entries may reside in various states that must be managed. An important underlying principle for managing record states is the need to retain Record Entries that have been viewed for patient care purposes even if the Entry has not been completed or attested. This principle has important legal impact because it provides an account of what the provider viewed and relied on for clinical decision-making. For example, if Record Entry content was available in pending state and a clinician used the information to make decisions, it is important to retain the pending version even after the final version was available. Determining if Record Entry content was used for patient care may be challenging. Access logs could provide a mechanism to determine if the information was used.	
RI.1.3.1 Function Manage Record Pending State		2141
	Statement: Manage Record Entries during the various states of completion. **Description:** Record Entries may reside in various states that must be managed. An important underlying principle for managing record states is the need to retain Record Entries that have been viewed for patient care purposes even if it has not been completed or attested. This principle has important legal impact because it provides a record of what the provider relied on for clinical decision-making. For example, if a Record Entry was available in pending state and a clinician accessed the information to make decisions, it is important to retain the pending version even after the final version was available. Determining if the Record Entry was accessed for patient care may be challenging. Access logs should show if the information was accessed/viewed.	
	1. The system SHOULD provide the ability to manage the length of time a Record Entry can be in a pending or inactive state before being administratively closed.	2142
	2. The system MAY present a notification to the author or designate that a Record Entry will be administratively closed after a designated period of time.	2143
	3. The system MAY present pending Record Entries in accordance with the organization's business rules.	2144
	4. IF the system displays pending Record Entries, THEN the system SHALL tag and present that a Record Entry is pending or incomplete.	2145
	5. The system SHOULD provide the ability to update a Record Entry status to one of:- complete, - complete while retaining incomplete version of the Entry if viewed for patient care or used by the system, - mark as erroneous and retain if Entry used for patient care or by the system, or - discard if Entry never viewed for patient care purposes.	2146
	6. The system SHOULD provide the ability to manage administrative closure of a Record Entry after a period of inactivity according to scope of practice, organizational policy, and/or jurisdictional law.	2147
	7. The system SHALL capture a date/time stamp and identify the author each time a Record Entry is updated including when opened, when updated, with the signature event and when officially closed, conforming to function TI.2.1.1 (Record Entry Audit Triggers).	2148
RI.1.3.2 Function Manage Record Entry Amended, Corrected and Augmented State		2149
	Statement: Manage Record Entries amended, corrected or augmented after finalization (or signature/attestation). **Description:** Clinicians need the ability to correct, amend or augment Record Entries once they have been completed. When an amendment, correction or augmentation has been made, principles for documentation practices require that the original documentation must be accessible, readable, and unobliterated. A user must have a clear indication that modifications have been made to an Record	

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	Entry. There is optionality in how a system may identify a Record Entry that has been corrected or amended – a flag or indicator could be displayed, the text could be in a different font, etc. The original Record Entry is not required to be displayed, but can be linked or traced back. The original Record Entry and each successive amendment, correction or augmentation should be retained for the legally prescribed timeframe as defined by scope of practice, organizational policy, and/or jurisdictional law.	
	1. The system SHALL provide the ability to update a Record Entry for purposes of amendment, correction or augmentation, conforming to function RI.1.1.2 (Amend Record Entry Content).	2150
	2. The system SHALL provide the ability to tag a Record Entry as an amendment, a correction of erroneous information and the reason, or an augmentation to supplement content.	2151
	3. The system SHALL capture, maintain and render the corresponding date, time, and user specifying when and by whom a Record Entry was amended, corrected, or augmented, conforming to function RI.1.1.2.1 (Evidence of Record Entry Amendment Event).	2152
	4. The system SHALL present the current version and provide a link or clear direction for accessing previous version(s) of the Record Entry.	2153
	5. The system SHALL manage all versions of the Record Entry for the legal retention period, conforming to function RI.1.2.1 (Manage Record Entries).	2154
RI.1.3.3 Function Manage Record Entry Succession and Version Control		2155
	Statement: Manage successive Record Entry versions over time. **Description:** The system must have a mechanism to handle versions and succession of Record Entries (such as a preliminary and final laboratory reports, amended or corrected documents). Versioning and succession management is based on Record Entry content, and/ or status change over time.A version may be one of:1) A completed and attested Record Entry; 2) A Record Entry completed and attested which has been modified one or more times3) A Record Entry that has been viewed for clinical decision-making purposes by an individual other than the author4) A Record Entry that has been captured in an incomplete state per organization business rules and updated over time (i.e., a preliminary laboratory test). 5) A Record Entry that electively, according to the author, must be preserved in the current state at a given point in time (i.e., History and Physical). Certain types of Record Entries are typically handled in versions, for example: laboratory results (preliminary and final)- Dictated reports- Work ups (over course of days)The prior version of Record Entries should be retained for the legally prescribed timeframe as defined by scope of practice, organizational policy, and jurisdictional law.	
	1. The system SHOULD provide the ability to manage Record Entries that become new versions when their state changes (e.g., augmented, amended, corrected, etc.).	2156
	2. The system SHALL provide the ability to update a Record Entry and save it as a new version.	2157
	3. The system SHALL capture, maintain and render the date, time and user for the original and each updated version of the Record Entry.	2158
	4. The system SHALL manage the succession of Record Entries in chronological version order.	2159
RI.1.3.4 Function Manage Record Entry Retraction		2160
	Statement: Remove a record entry from view if it is deemed erroneous and cite the reason. **Description:** Record retraction is used to reverse changes that have been made to existing Record Entries. Once a Record Entry has been retracted, it is no longer visible in standard queries, though it remains accessible in EHR audit records should evidence ever be required for legal or other exceptional circumstances.Canada Health Infoway provides the following definition for retraction: This mechanism allows an existing record to be “removed” from the EHR if it is deemed erroneous. It can also be used to reverse changes that have been made to an existing record. Once a record has been retracted, it is no longer visible in standard queries, though it remains accessible in EHR audit records should evidence ever be required for legal or other exceptional circumstances. After retracting an erroneous record, a user has the ability to resubmit a corrected record with no visible indication that there was ever a previous version. Retract generally has significant constraints upon its use because of the risks of removing data from a patient’s record that might have been used by others in making decisions. The specifics will vary by jurisdiction, and potentially even by type of data.There are times that a EHR Record Entry is created then found to be erroneous, i.e., the record may belong to another individual. In these cases, it is necessary to remove that record from view (storing it in case it may be needed for litigation or investigation purposes, etc.). After retracting an erroneous record, a user has the ability to resubmit a corrected record with no visible indication that there was ever a previous version.	
	1. The system SHALL provide the ability to hide a Record Entry from view and retain it such that it is only visible upon specific request and with appropriate authorization.	2161
	2. The system SHOULD provide the ability to capture users who viewed a Record Entry prior to its retraction and notify them of the retraction.	2162
	3. The system SHOULD provide the ability to capture and retain the reason why a Record Entry was retracted.	2163
	4. The system SHALL conform to function RI.1.1.17 (Deprecate/Retract Record Entries).	2164
RI.1.4 Function Record Completeness		2165

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Statement: Manage Record Completeness **Description:** The EHR-S must provide the ability for an organization to define minimum elements and timeframes for completion at the report level and at the record level. Provide a report that identifies completion and timeliness status by patient/ health record number or other specified parameters.Prior to disclosure for legal proceedings or other official purposes, an organization analyzes the health record for completeness. EHR systems must provide the ability to define a minimum set of content to be analyzed for timeliness and completeness and provide a report of the status.	
	1. The system SHALL provide the ability to manage timeframes for completion of specified Record Entry content according to organizational business rules.	2166
	2. The system SHOULD provide the ability to tag by patient/health record number the completeness status of specified Record Entry content noting identified deficiencies.	2167
	3. The system SHOULD provide the ability to render a report by patient/health record number indicating the completeness status of specified Record Entry content noting identified deficiencies.	2168
	4. The system SHOULD provide the ability to render a visual indicator denoting that the content of a specified Record Entry content is incomplete according to organizational business rules.	2169
	5. The system SHOULD provide the ability to render a reminder to clinicians for the completion of specified Record Entry content (at the data or report level) according to organizational business rules (e.g., complete attestation, complete a section).	2170
RI.2 Function Record Synchronization		2171
	Statement: Manage Record Synchronization **Description:** An EHR-S may consist of a set of components or applications; each application manages a subset of the health information. Therefore it is important that, through various interoperability mechanisms, an EHR-S maintains all the relevant information regarding the health record in synchrony. For example, if a physician orders an MRI, a set of diagnostic images and a radiology report will be created. As a result, the patient demographic information, the order for MRI, the diagnostic images associated with the order, and the report associated with the study must all be synchronized in order for the clinicians to receive a synchronized view the complete record (with respect to time and geographic location).Date and time need to be consistent across the applications that are part of the EHR system.Synchronization demonstrates a sequence and chain of events for reconstruction and is relevant during a legal proceeding. Maintenance of synchronization activities could be relevant during a legal proceeding.Note: Standards exist for Consistent Date and Time.	
	1. The system SHALL conform to function TI.5.1 (Application and Structured-Document Interchange Standards).	2172
	2. The system SHOULD conform to function TI.3 (Registry and Directory Services).	2173
	3. The system SHOULD provide the ability to link Record Entries to external information.	2174
	4. The system SHOULD store the location of each known Record Entry in order to enable authorized access to a complete logical health record if the EHR is distributed among several applications, services, or devices within the EHR-S.	2175
	5. The system SHALL provide the ability to manage date and time-related information between applications, components, services, systems, and devices.	2176
RI.3 Function Record Archive and Restore		2177
	Statement: Manage Record Archive and Restore **Description:** EHR Record Entries must be transitioned over its lifecycle from online data structures to near-line or off-line data structures. The archive function performs this transition of Record Entries from an online, production EHR-S to offline storage for information that is not being purged/destroyed. The system must provide such archive and restore functions to extract and preserve indefinitely, Record Entries selected to be removed from the live production EHR-S database and retained.Record Entries must be archived and restored in such a manner as to permit them to be returned to their original or similar information structures. Archived Record Entries must also include corresponding metadata to ensure logical and semantic consistency of the information for subsequent access upon restoration.The archive function should provide both an automated, configurable capability as well as a user-invoked archival function to enable selected Record Entries to be preserved, or flagged for preservation. In the first instance, rules are specified to enable the system to conduct archiving in an unattended fashion. This is often the case for periodic system maintenance requirements (e.g., nightly processing where archival, data summarization and possibly purging of information occurs). In the second instance the system should provide the ability to select Record Entries to be preserved for future reference and access, such as in the case where selected Entries need to be preserved and retained for litigation.In restoring information, it may occur that Record Entries being restored are a subset of the Entries originally archived. For example, when all Record Entries for a patient encounter were archived and only a particular set of Record Entries related to a study or result are to be restored. The system may provide for such finer granularity of restoration.Archiving and restoring of Record Entries must be performed in a timely fashion, consistent with the operational requirements of both EHR users and system and technology capabilities.The system must enable compliance with records retention according to scope of practice, organizational policy or jurisdictional law.	
	1. The system SHALL provide the ability to archive and restore Record Entries according to scope of practice, organizational policy, and/or jurisdictional law (e.g., to/from off-line or near-line media).	2178
	2. The system SHALL provide the ability for an authorized user to tag and untag Record Entries to be archived.	2179

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	3. The system SHALL provide the ability to archive or restore metadata that is associated with Record Entries that have been archived or restored.	2180
	4. The system SHOULD provide the ability to enter a target destination when restoring Record Entries (e.g., original data location, temporary user storage, or a research/analysis database).	2181
	5. The system SHOULD tag Record Entries in the online database that will be archived or retained during the archival process.	2182
	6. The system SHOULD provide the ability to enter a schedule for archive and restore processing.	2183
	7. The system MAY provide the ability to selectively restore portions of archived Record Entries.	2184
	8. The system SHALL provide the ability to manage (configure) archival parameters for Record Entries (e.g., what and when to archive).	0

7. Trust Infrastructure Section

Section Overview

The Trust Infrastructure (TI) Section consists of functions common to an EHR System infrastructure, particularly those functions foundational to system operations, security, efficiency and data integrity assurance, safeguards for privacy and confidentiality, and interoperability with other systems. TI functions are core and foundational to all other functions of the Model (Care Provision, Care Provision Support, Population Health, Administrative Support and Record Infrastructure). Note extensive reference to TI functions in Overarching Criteria. TI functions may be implemented within the architecture of a single system or across a tightly coupled suite of systems (applications).All functions within the Trust Infrastructure Section have an identifier starting with “TI”.

Section/Id#: Type: Name:	Conformance Criteria	Row#
TI.1 Header Security		2185
Statement: Manage EHR-S security. **Description:** EHR-S security consists of entity authentication, entity authorization, entity access control, patient access management, secure data exchange, attestation, patient privacy and confidentiality. EHR audit functions are described in TI.2.		
TI.1.1 Function Entity Authentication		2186
Statement: Authenticate EHR-S users, and/or entities before allowing access. **Description:** All entities accessing the EHR-S are subject to authentication.Examples of entity authentication, with varying levels of authentication rigor, include: - username/password;- digital certificate;- secure token;- biometrics.		
	1. The system SHALL authenticate entities (e.g., users, organizations, applications, components, objects, and/or devices) accessing EHR-S protected resources (e.g., functions and data) according to scope of practice, organizational policy, and/or jurisdictional law, using an authentication mechanism such as an accredited Standards Development Organization-approved authentication standard (e.g., SAML, WS-Trust, Kerberos), username/password, digital certificate, secure token, biometric, or hardware-specific addressing mechanism. (See also ISO 22600.)	2187
	2. The system SHALL manage authentication data/information securely (e.g., passwords or biometric data).	2188
	3. The system SHALL maintain configurable conditions and rules which protect against invalid, possibly malicious, authentication attempts according to organizational policy, and/or jurisdictional law (e.g., consecutive invalid logon attempts).	2189
	4. IF passwords are used to control access to the EHR-S, THEN the system SHALL provide the ability to maintain configurable timeframes (e.g., 180 days) for the reuse of passwords according to organizational policy, and/or jurisdictional law.	2190
	5. IF passwords are used to control access to the EHR-S, THEN the system SHALL provide the ability to maintain a configurable limit on the reuse of recently used passwords (e.g., the last 5 passwords) according to organizational policy, and/or jurisdictional law.	2191
	6. IF username/passwords are used to control access to the EHR-S, THEN the system SHALL maintain password strength rules (e.g., requiring a minimum number of characters and inclusion of alpha-numeric complexity).	2192
	7. IF passwords are used to control access to the system, THEN the system SHALL capture the passwordti. using obfuscation techniques (e.g., during user password entry) according to scope of practice, organizational policy, and/or jurisdictional law.	2193
	8. IF passwords are used to control access to the EHR-S, THEN the system SHALL manage password reset as an administrative function.	2194
	9. IF user passwords are initially set or later reset by an administrator, THEN the system SHALL provide the ability to update password at the next successful logon.	2195
	10. The system SHALL present limited feedback to the user during authentication.	2196
	11. The system SHALL provide the ability to enter case-insensitive 'usernames' that contain typeable alpha-numeric characters in support of ISO-646/ECMA-6 (aka US ASCII).	2197
	12. IF passwords are used, THEN the system SHALL provide the ability to enter case-sensitive passwords that contain typeable alpha-numeric characters in support of ISO-646/ECMA-6 (aka US ASCII).	2198
TI.1.2 Function Entity Authorization		2199
Statement: Manage set(s) of EHR-S access control permissions. **Description:** Entities are authorized to use components of an EHR-S in accordance with their scope of practice within local policy or legal jurisdiction. Authorization rules provide a proper framework for establishing access permissions and privileges for the use of an		

Section/Id#: Type: Name:	Conformance Criteria	Row#
	EHR system, based on user, role or context. A combination of these authorization categories may be applied to control access to EHR-S resources (i.e., functions or data), including at the operating system level.- User based authorization refers to the permissions granted to access EHR-S resources based on the identity of an entity (e.g., user or software component). - Role based authorization refers to the permissions granted to access EHR-S resources based on the role of an entity. Examples of roles include: an application or device (tele-monitor or robotic); or a nurse, dietician, administrator, legal guardian, and auditor. - Context-based Authorization refers to the permissions granted to access EHR-S resources within a context, such as when a request occurs, explicit time, location, route of access, quality of authentication, work assignment, patient consents and authorization. See ISO 10181-3 Technical Framework for Access Control Standard. For example, an EHR-S might only allow supervising providers' context authorization to attest to entries proposed by residents under their supervision.	
	1. The system SHALL provide the ability to manage sets of access-control permissions granted to an entity (e.g., user, application, device) based on identity, role, and/or context according to scope of practice, organizational policy, and/or jurisdictional law.	2200
	2. The system SHALL conform to TI.2 (Audit) to audit authorization actions as security events.	2201
	3. The system SHALL provide the ability to manage roles (e.g., clinician versus administrator) and contexts (e.g., legal requirements versus emergency situations) for authorization according to scope of practice, organizational policy, and/or jurisdictional law.	2202
	4. The system SHALL maintain a revision history of all entity record modifications.	2203
	5. The system MAY provide the ability to manage authorizations for the use of portable media in according to scope of practice, organizational policy, and/or jurisdictional law.	2204
TI.1.3 Function Entity Access Control		2205
	Statement: Manage access to EHR-S resources. **Description:** To ensure access is controlled, an EHR-S must authenticate and check authorization of entities for appropriate operations.	
	1. The system SHALL conform to function TI.1.1 (Entity Authentication).	2206
	2. The system SHALL conform to function TI.1.2 (Entity Authorization).	2207
	3. The system SHALL provide the ability to manage system and data access rules for all EHR-S resources according to scope of practice, organizational policy, and/or jurisdictional law.	2208
	4. The system SHALL manage the enforcement of authorizations to access EHR-S resources.	2209
	5. The system SHALL control access to EHR-S resources after a configurable period of inactivity by terminating the session, or by initiating a session lock that remains in effect until the entity re-establishes access using appropriate identification and authentication procedures, according to organizational policy, and/or jurisdictional law.	2210
	6. The system SHOULD provide the ability to control-access to data, and/or functionality according to scope of practice, organizational policy, and/or jurisdictional law.	0
	7. The system SHALL control-access to data, and/or functionality by using authentication mechanisms that comply with regulatory and policy guidelines (e.g.,by using a combination of Username and Password, Digital Certificates, Secure Tokens, and/or Biometrics).	0
	8. The system MAY provide the ability to determine the identity of public health agencies for healthcare purposes through the use of internal, and/or external registry services or directories.	0
	9. The system MAY provide the ability to determine the identity of healthcare resources (e.g., Meal Delivery services for home-based patients) and devices (e.g., wheelchairs) for resource management purposes through the use of internal, and/or external registry services or directories.	0
TI.1.3.1 Function Emergency Access Control		2211
	Statement: Manage emergency access to EHR-S resources. **Description:** The intent of Emergency Access Control is to mitigate the potential for impeding the provision of care in an emergency situation in accordance with organizational policy.For example, emergency access may include: 1) Single record entry (e.g., single laboratory results, single document, single view); 2) Single patient; 3) Single login session, multiple patients; 4) Site mode allowing simultaneous emergency access to all users.Logging of a user's activities should occur in the audit record/metadata. Reports of emergency access use for follow up are critical for compliance and monitoring.	
	1. The system SHALL provide the ability to define emergency access rules according to scope of practice, organizational policy, and/or jurisdictional law.	2212
	2. The system MAY provide the ability to capture categories of emergency access criteria (e.g., 1) Single record entry such as single laboratory results, single document, single view; 2) Single patient; 3) Single login session, multiple patients; 4) Site mode allowing simultaneous emergency access to all users) according to scope of practice, organizational policy, and/or jurisdictional law.	2213
	3. The system SHALL manage emergency access by individual users based on criteria (e.g., defined rules and categories) according to organizational policy, and/or jurisdictional law.	2214
	4. The system SHALL provide the ability to maintain emergency access time limits according to scope of practice, organizational policy, and/or jurisdictional law.	2215
	5. The system MAY present periodic reminders to a system administrator to review user's emergency access privileges.	2216

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	6. The system SHALL provide the ability to capture a reason for emergency access.	2217
	7. The system SHALL provide the ability to render an after action report for follow up of emergency access.	2218
TI.1.4 Function Patient Access Management		2219

Statement: Manage a patient's access to personal health information.

Description: A healthcare delivery organization will be able to manage a patient's ability to view his or her EHR based on organization policy or jurisdictional law. Typically, a patient or their legal representative (e.g., guardian, surrogate) has the right to view his or her EHR.

	1. IF organizational policy allows patient access to the EHR-S, THEN the system SHALL conform to Function TI.1.3 (Entity Access Control).	2220
	2. IF organizational policy allows patient access to the EHR-S, THEN the system SHALL conform to Function TI.1.2 (Entity Authorization).	2221
TI.1.5 Function Non-Repudiation		2222

Statement: Limit an EHR-S user's ability to deny (repudiate) data origination, transmission or receipt by that user.

Description: An EHR-S allows data entry to a patient's electronic health record and it can be a sender or receiver of healthcare information. Non-repudiation is a way to guarantee that the source of the data/record cannot later deny that fact; and that the sender of a message cannot later deny having sent the message; and that the recipient cannot deny having received the message. Components of non-repudiation can include: - Digital signature, which serves as a unique identifier for an individual (much like a written signature); - Confirmation service, which utilizes a message transfer agent to create a digital receipt (providing confirmation that a message was sent, and/or received); - Timestamp, which proves that a document existed at a certain date and time; - The use of standardized timekeeping protocols (e.g., the Integrating the Healthcare Enterprise (IHE) Consistent Time Profile).

	1. The system SHALL capture the identity of the entity taking the action according to scope of practice, organizational policy, and/or jurisdictional law.	2223
	2. The system SHALL capture time stamp of the initial entry, modification and exchange of data according to scope of practice, organizational policy, and/or jurisdictional law.	2224
	3. The system SHALL conform to function TI.2 (Audit) to prevent repudiation of data origination, transmission and receipt according to scope of practice, organizational policy, and/or jurisdictional law.	2225
	4. The system SHOULD conform to function RI.1.1.4 (Attest Record Entry Content) to ensure integrity of data and data exchange and thus prevent repudiation of data origination, transmission or receipt according to scope of practice, organizational policy, and/or jurisdictional law.	2226
TI.1.6 Function Secure Data Exchange		2227

Statement: Secure all modes of EHR data exchange.

Description: Whenever an exchange of EHR information occurs, it requires appropriate security and privacy considerations, including data obfuscation as well as both destination and source authentication when necessary. For example, it may be necessary to encrypt data sent to remote or external destinations.

	1. The system SHALL secure all modes of EHR data exchange.	2228
	2. The system SHALL conform to function TI.1.7 (Secure Data Routing).	2229
	3. The system SHOULD provide the ability to de-identify data.	2230
	4. The system SHALL encrypt and decrypt EHR data that is exchanged over a non-secure link.	2231
	5. IF encryption is used, THEN the system SHALL exchange data using recognized standards-based encryption mechanisms according to organizational policy, and/or jurisdictional law.	2232
	6. IF the EHR-S is the recipient of a secure data exchange, THEN the system SHOULD provide acknowledgment of receipt.	2233
	7. The system SHALL provide the ability to determine static or dynamic addresses for known and authorized sources and destinations.	2234
TI.1.7 Function Secure Data Routing		2235

Statement: Route electronically exchanged EHR data only to/from known and authenticated destinations/sources (according to applicable healthcare-specific rules and relevant standards).

Description: An EHR-S needs to ensure that it is exchanging EHR information with the entities (applications, institutions, directories) it expects. This function depends on entity authorization and authentication to be available in the system. For example, a physician practice management application in an EHR-S might send claim attachment information to an external entity. To accomplish this, the application must use a secure routing method, which ensures that both the sender and receiving sides are authorized to engage in the information exchange. Known sources and destinations can be established in a static setup or they can be dynamically determined. Examples of a static setup are recordings of IP addresses or recordings of DNS names. For dynamic determination of known sources and destinations systems can use authentication mechanisms as described in IN.1.For example, the sending of a laboratory order from the EHRS to

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	a laboratory system within the same organization usually uses a simple static setup for routing. In contrast sending a laboratory order to a reference laboratory outside of the organization will involve some kind of authentication process. Provision of a secure network infrastructure is beyond the scope of an EHR-S.	
	1. The system SHALL conform to function TI.1.1 (Entity Authentication) to exchange EHR data only to and from known, authenticated sources and destinations.	2236
	2. The system SHALL conform to Section TI.2 (Audit) to capture audit information about changes to the status of sources and destinations.	2237
TI.1.8 Function Patient Privacy and Confidentiality		2238
	Statement: Enable the enforcement of the applicable jurisdictional and organizational patient privacy rules as they apply to various parts of an EHR-S through the implementation of security mechanisms. **Description:** Patients' privacy and the confidentiality of EHRs are violated if access to EHRs occurs without authorization. Violations or potential violations can impose tangible economic or social losses on affected patients, as well as less tangible feelings of vulnerability and pain. Fear of potential violations discourages patients from revealing sensitive personal information that may be relevant to diagnostic and treatment services. Rules for the protection of privacy and confidentiality may vary depending upon the vulnerability of patients and the sensitivity of records. Strongest protections should apply to the records of minors and the records of patients with stigmatized conditions. Authorization to access the most sensitive parts of an EHR is most definitive if made by the explicit and specific consent of the patient. Please see the definition of masking in the glossary.Organizational practices related to privacy and security jurisdictional laws could be called into question during a legal proceeding. Adherence to applicable laws supports the credibility and trustworthiness of the organization.	
	1. The system SHALL provide the ability to maintain compliance with requirements for patient privacy and confidentiality according to scope of practice, organizational policy, and/or jurisdictional law (e.g., US HIPAA Privacy Rules, US Federal Conditions of Participation for Medicare/Medicaid Providers).	2239
	2. The system SHALL conform to function TI.1.1 (Entity Authentication).	2240
	3. The system SHALL conform to function TI.1.2 (Entity Authorization).	2241
	4. The system SHALL conform to function TI.1.3 (Entity Access Control).	2242
	5. The system SHALL conform to function TI.1.5 (Non-Repudiation).	2243
	6. The system SHALL conform to function TI.1.6 (Secure Data Exchange).	2244
	7. The system SHALL conform to function TI.2 (Audit).	2245
	8. The system SHALL provide the ability to maintain varying levels of confidentiality according to patient preferences, user role, scope of practice, organizational policy, and/or jurisdictional law.	2246
	9. The system SHALL provide the ability to mask parts of the electronic health record (e.g., medications, conditions, sensitive documents) from disclosure according to patient preferences, user role, scope of practice, organizational policy, and/or jurisdictional law.	2247
	10. The system SHALL provide the ability to unmask (override a mask) in emergency or other specific situations in accordance with users' role, and according to scope of practice, organizational policy, and/or jurisdictional law.	2248
	11. The system SHOULD provide the ability to maintain indicators (flags) to health record users that content has been masked in accordance with users' role, and according to scope of practice, organizational policy, and/or jurisdictional law.	2249
	12. IF the system allowed a user to unmask (override a mask) in emergency or other specific situations, THEN the system SHALL provide the ability to collect the reason for the override.	2250
	13. The system SHALL provide the ability to manage patient consents to, or restrictions against, any access to data.	2251
	14. The system SHALL provide the ability to manage a privacy policy according to patient preferences, user role, scope of practice, organizational policy, and/or jurisdictional law.	2252
	15. The system SHALL provide the ability to control access by specified user(s) to a particular patient health record either by inclusion or exclusion according to patient preferences, user role, scope of practice, organizational policy, and/or jurisdictional law.	2253
TI.1.8.1 Function Redact Patient Identifying Information		2254
	Statement: Maintain patient identities and conditions invisible to the public and other providers who do not have "need to know" on public tracking screens. **Description:** A number of systems implement large tracking screens, common displays or dashboards to support workflows. In these applications, there is a need to create de-identified views for broadcast in common areas.	
	1. The system SHALL provide the ability to manage redaction of patient identities on publicly viewable status boards according to organizational policy, and/or jurisdictional law.	2255
TI.1.8.2 Function		2256

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Protect Individual Patient Identity		
	Statement: Flag patient identity as confidential to others. **Description:** Create a flag to indicate to all providers caring for the patient, as well as administrative staff who may receive phone calls from family members or others, the need to protect the identity of patients at risk of harm, or requesting similar anonymity. Despite best efforts of confidentiality, display should identify patients at particular risk of harm during stay (e.g., domestic violence).	
	1. The system SHALL provide the ability to maintain the designation of patients who require protection of their identity from others, including family, visitors, and non participating healthcare providers according to scope of practice, organizational policy, and/or jurisdictional law.	2257
TI.1.9 Function System Operation Measurements		2258
	Statement: Manage the change of status of an external facility. **Description:** A health care delivery relies on services provided by other external facilities such as laboratories or Long Term Care facilities. The status of those facilities is subject to change for example: power outage, flooding or overcapacity. Therefore, the EHR system needs to capture the status of the external facilities, notify appropriate individuals / organizations or even change the workflow based on established business rules. Change of the status of an external facility is patient safety concern because a provider may need to adjust patient care or care workflows accordingly. For example, changes of status of external facility include: laboratory no longer accredited, laboratory power outage, Long Term Care facility at overcapacity. If laboratory loses accreditation an administrator needs to be notified to adjust the workflow. If status change is anticipated on regular basis, the system may automatically trigger workflow adjustment according to established business rule that take in consideration the status of the external facility. The example for later, the local Long Term Care facility may routinely exceed the capacity on the weekends; therefore, the business rule will accommodate for automatic workflow adjustments.	
	1. The system SHOULD provide the ability to manage the change of status of an external facility.	2259
TI.1.10 Function Service Availability		2260
	Statement: Manage the ability to access, render and determine information related to Service Level Agreement. **Description:** A provider may need to be aware of certain Service Level Agreement information in order to mitigate patient safety-related risks that depend on system availability or system performance.	
	1. The system SHOULD provide the ability to manage Service Level Agreement information according to scope of practice, organizational policy, and/or jurisdictional law.	2261
	2. The system MAY provide the ability to render system availability statistics and system performance statistics as specified in the Service Level Agreement according to scope of practice, organizational policy, and/or jurisdictional law.	2262
TI.1.11 Function Trusted Information Exchange Environment		2263
	Statement: Maintain a Trusted Information Exchange environment to enable common security measures among participants in the health information exchange. **Description:** A Trusted Information Exchange environment facilitates protected health information exchange by employing common user authentication across multiple systems, and/or organizations. A Trusted Information Exchange environment can help decrease risk and liability for participating members of the Trusted Information Exchange environment by ensuring that protected health information is consistently managed by all participants.	
	1. The system SHOULD provide the ability to manage applicable Trusted Information Exchange environment-related information according to scope of practice, organizational policy, and/or jurisdictional law. (See ISO 22600, "Privilege Management and Access Control", Part 1, "Overview and Policy Management".)	2264
TI.2 Function Audit		2265
	Statement: Audit Key Record, Security, System and Clinical Events **Description:** EHR Systems have built in audit triggers to capture key events in real-time, including events related to record management, security, system operations or performance or clinical situations.Event details, including key metadata (who, what, when, where), are captured in an Audit Log.Audit Review functions allow various methods of critical event notification as well as routine log review.Audit functions implement requirements according to scope of practice, organizational policy, and jurisdictional law.	
	1. The system SHALL conform to function TI.1.3 (Entity Access Control) to limit access to, or modification of, audit record information to appropriate entities according to scope of practice, organizational policy, and/or jurisdictional law.	2266
	2. The system SHALL conform to function TI.1.3 (Entity Access Control) to limit access to audit record information for purposes of deletion according to scope of practice, organizational policy, and/or	2267

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	jurisdictional law (e.g., limit access to only allow a specific system administrator to delete audit record information).	
TI.2.1 Function Audit Triggers		2268
	Statement: Manage Audit Triggers **Description:** EHR Systems have built in audit triggers to capture key events in real-time. Audit triggers signal key:- Record management and lifecycle events;- Security events related to system and data safeguards, both routine and exceptional;- System events related to performance and operations, both routine and exceptional.- Clinical events with special log requirements.	
	1. The system SHALL audit key events, as specified in function TI.2.1 (Audit Triggers) and child functions, according to scope of practice, organizational policy, and/or jurisdictional law.	2269
	2. The system SHALL capture key Audit Metadata at each Audit Trigger, as specified in TI.2.1 (Audit Triggers) and child functions, according to scope of practice, organizational policy, and/or jurisdictional law.	2270
	3. The system SHALL capture an Audit Log Entry at each Audit Trigger as specified in TI.2.1 (Audit Triggers) according to scope of practice, organizational policy, and/or jurisdictional law.	2271
	4. The system SHALL capture the current master clock time to establish valid record date and time metadata.	2272
	5. The system MAY manage Audit Trigger logging using a common audit engine (e.g., using schema and transports such as specified in the Audit Log specification of IHE Audit Trails and Node Authentication (ATNA) Profile).	2273
TI.2.1.1 Function Record Entry Audit Triggers		2274
	Statement: Manage Record Entry Audit Triggers **Description:** Record Entries are managed throughout their lifespan at various points in their lifecycle. Record Entry Audit Triggers are designed to capture Record Entry related events including key metadata (who, what, when, where, why). See Function RI.1, Record Lifecycle.	
	1. The system SHALL conform to Function RI.1 (Record Lifecycle) and its RI.1.x.1 Subsections to capture and maintain Record Entry Audit Metadata.	2275
	2. The system SHALL link an Audit Log Entry to each Record Entry according to scope of practice, organizational policy, and/or jurisdictional law.	2276
	3. The system SHALL harmonize Audit Log Entry Metadata and corresponding Record Entry Metadata to ensure they remain identical.	2277
TI.2.1.2 Function Security Audit Triggers		2278
	Statement: Manage Security Audit Triggers **Description:** Security Audit Triggers are designed to capture security related events, both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL provide the ability to enter the reason that access control functions are being overridden.	2279
	2. The system SHALL audit key events according to scope of practice, organizational policy, and/or jurisdictional law.	2280
	3. The system SHALL capture key Audit Metadata at each Audit Trigger according to scope of practice, organizational policy, and/or jurisdictional law.	2281
	4. The system SHALL capture an Audit Log Entry at each Audit Trigger according to scope of practice, organizational policy, and/or jurisdictional law.	2282
	5. The system SHALL provide the ability to record system maintenance events for entry to and exit from the EHR system.	2283
	6. The system MAY capture an Audit Log Entry at each Audit Trigger using a common audit engine, e.g., standards-based software.	2284
TI.2.1.2.1 Function Security Event Security Audit Trigger		2285
	Statement: Manage Audit Trigger initiated to track Security event. **Description:** Capture security events, both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence when security events are detected according to scope of practice, organizational policy, and/or jurisdictional law.	2286
	2. The system SHALL capture identity of the organization.	2287
	3. IF known, THEN the system SHALL capture identity of the user.	2288

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	4. The system SHALL capture identity of the system.	2289
	5. The system SHALL capture the event initiating audit trigger.	2290
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2291
	7. The system SHALL capture identity of the location (i.e., network address).	2292
	8. The system MAY capture the rationale for the event initiating audit trigger.	2293
TI.2.1.2.2 Function User Authentication to the System (Start user session) Security Audit Trigger		2294
Statement: Manage Audit Trigger initiated to track user authentication to the system (start user session). **Description:** Capture user authentication to the system (start user session), both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of user authentication at logon (start session).	2295
	2. The system SHALL capture identity of the organization.	2296
	3. IF known, THEN the system SHALL capture identity of the user.	2297
	4. The system SHALL capture identity of the system.	2298
	5. The system SHALL capture the event initiating audit trigger.	2299
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2300
	7. The system SHALL capture identity of the location (i.e., network address).	2301
	8. The system SHALL capture the method of user authentication (e.g., user ID, password, biometrics, token, security question(s)).	2302
TI.2.1.2.3 Function User Authentication (System Prompt for Password Change) Security Audit Trigger		2303
Statement: Manage Audit Trigger initiated to track user authentication (system prompt for password change). **Description:** Capture user authentication (system prompt for password change), both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of user authentication when user is prompted to change password.	2304
	2. The system SHALL capture identity of the organization.	2305
	3. IF known, THEN the system SHALL capture identity of the user.	2306
	4. The system SHALL capture the identity of the system.	2307
	5. The system SHALL capture the event initiating audit trigger.	2308
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2309
	7. The system SHALL capture identity of the location (i.e., network address).	2310
	8. IF password change successful, THEN the system SHALL capture the new password.	2311
TI.2.1.2.4 Function User Request to Change Password Security Audit Trigger		2312
Statement: Manage Audit Trigger initiated to track user request to change password. **Description:** Capture user request to change password, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of user authentication when user requests password change.	2313
	2. The system SHALL capture identity of the organization.	2314
	3. IF known, THEN the system SHALL capture identity of the user.	2315
	4. The system SHALL capture identity of the system.	2316
	5. The system SHALL capture the event initiating audit trigger.	2317
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2318
	7. The system SHALL capture identity of the location (i.e., network address).	2319
	8. The system MAY capture the rationale for the event initiating audit trigger.	2320
	9. IF password change successful, THEN the system SHALL capture the new password.	2321
TI.2.1.2.5 Function User Log Out (End user session) Security Audit Trigger		2322

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Statement: Manage Audit Trigger initiated to track user log out (end user session). **Description:** Capture user log out (end user session), both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence of user logout (end session).	2323
	2. The system SHALL capture identity of the organization.	2324
	3. IF known, THEN the system SHALL capture identity of the user.	2325
	4. The system SHALL capture identity of the system.	2326
	5. The system SHALL capture the event initiating audit trigger.	2327
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2328
	7. The system SHALL capture identity of the location (i.e., network address).	2329
	8. The system SHOULD capture how the session ended (e.g., user logout, timeout, loss of connection, administrator logout, system failure).	2330
TI.2.1.2.6 Function User Access (Successful) Security Audit Trigger		2331
	Statement: Manage Audit Trigger initiated to track user access (successful). **Description:** Capture user access (successful), both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence when user access is successful.	2332
	2. The system SHALL capture identity of the organization.	2333
	3. IF known, THEN the system SHALL capture identity of the user.	2334
	4. The system SHALL capture identity of the system.	2335
	5. The system SHALL capture the event initiating audit trigger.	2336
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2337
	7. The system SHALL capture identity of the location (i.e., network address).	2338
TI.2.1.2.7 Function User Attempts to Access Data (Unsuccessful – Access Denied) Security Audit Trigger		2339
	Statement: Manage Audit Trigger initiated to track user attempts to access data (unsuccessful – access denied). **Description:** Capture user attempts to access data (unsuccessful – access denied), both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence when user access is unsuccessful (denied).	2340
	2. The system SHALL capture identity of the organization.	2341
	3. IF known, THEN the system SHALL capture identity of the user.	2342
	4. The system SHALL capture identity of the system.	2343
	5. The system SHALL capture the event initiating audit trigger.	2344
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2345
	7. The system SHALL capture identity of the location (i.e., network address).	2346
TI.2.1.2.8 Function Extraordinary User Access (Break the Glass) Security Audit Trigger		2347
	Statement: Manage Audit Trigger initiated to track extraordinary user access (break the glass). **Description:** Capture extraordinary user access (break the glass), both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence when extraordinary access is successful (e.g., "break the glass" scenario).	2348
	2. The system SHALL capture identity of the organization.	2349
	3. IF known, THEN the system SHALL capture identity of the user.	2350
	4. The system SHALL capture identity of the system.	2351
	5. The system SHALL capture the event initiating audit trigger.	2352
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2353
	7. The system SHALL capture identity of the location (i.e., network address).	2354
	8. The system SHALL capture the rationale for extraordinary user access.	2355
TI.2.1.2.9		2356

Section/Id#: Type: Name:	Conformance Criteria	Row#
Function User Permissions (Authorization) Security Audit Trigger		
Statement: Manage Audit Trigger initiated to track user permissions (authorization). **Description:** Capture user permissions (authorization), both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence when user permissions (authorizations) are granted, removed or updated.	2357
	2. The system SHALL capture identity of the organization.	2358
	3. IF known, THEN the system SHALL capture identity of the user.	2359
	4. The system SHALL capture identity of the system.	2360
	5. The system SHALL capture the event initiating audit trigger.	2361
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2362
	7. The system SHALL capture identity of the location (i.e., network address).	2363
	8. The system SHOULD capture the rationale for granting, removing or updating user permissions.	2364
	9. The system SHALL capture identity of user to whom permissions apply.	2365
	10. The system SHALL capture the new set of applicable user permissions (authorizations).	2366
TI.2.1.3 Function System Audit Triggers		2367
Statement: Manage System Audit Triggers **Description:** System Audit Triggers are designed to capture system related events, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHOULD provide the ability to record system maintenance events for loading new versions of, or changes to, the clinical system.	2368
	2. The system SHOULD provide the ability to store system maintenance events for loading new versions of codes and knowledge bases.	2369
	3. The system SHOULD provide the ability to record system maintenance events for creating and restoring of backup.	2370
	4. The system SHOULD provide the ability to audit events in the case of detection of corrupt or dirty data.	2371
	5. The system SHALL provide audit capabilities for recording access and usage of systems, data, and organizational resources.	2372
	6. The system SHALL provide audit capabilities to capture system events at the hardware and software architecture level.	2373
	7. The system SHALL provide the ability to record system maintenance events for entry to and exit from the EHR system.	2374
	8. The system SHALL provide the ability to record system maintenance events for remote access connections including those for system support and maintenance activities for security and access purposes.	2375
TI.2.1.3.1 Function System Event System Audit Trigger		2376
Statement: Manage Audit Trigger initiated to track system events. **Description:** Capture system events, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence when system events are detected according to scope of practice, organizational policy, and/or jurisdictional law.	2377
	2. The system SHALL capture identity of the organization.	2378
	3. IF known, THEN the system SHALL capture identity of the user.	2379
	4. The system SHALL capture identity of the system.	2380
	5. The system SHALL capture the event initiating audit trigger.	2381
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2382
	7. The system SHALL capture identity of the location (i.e., network address).	2383
	8. The system MAY capture the rationale for the event initiating audit trigger.	2384
TI.2.1.3.2 Function System Started System Audit Trigger		2385

Section/Id#: Type: Name:	Conformance Criteria	Row#
	Statement: Manage Audit Trigger initiated to track system started event. **Description:** Capture system started event, both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence when system started.	2386
	2. The system SHALL capture identity of the organization.	2387
	3. IF known, THEN the system SHALL capture identity of the user.	2388
	4. The system SHALL capture identity of the system.	2389
	5. The system SHALL capture the event initiating audit trigger.	2390
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2391
	7. The system SHALL capture identity of the location (i.e., network address).	2392
TI.2.1.3.3 Function Back Up Started System Audit Trigger		2393
	Statement: Manage Audit Trigger initiated to track back-up started event. **Description:** Capture back-up started event, both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence when database backup is initiated.	2394
	2. The system SHALL capture identity of the organization.	2395
	3. IF known, THEN the system SHALL capture identity of the user.	2396
	4. The system SHALL capture identity of the system.	2397
	5. The system SHALL capture the event initiating audit trigger.	2398
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2399
	7. The system SHALL capture identity of the location (i.e., network address).	2400
TI.2.1.3.4 Function Back Up Completed System Audit Trigger		2401
	Statement: Manage Audit Trigger initiated to track back-up completed event. **Description:** Capture back-up completed event, both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence when database backup is completed.	2402
	2. The system SHALL capture identity of the organization.	2403
	3. IF known, THEN the system SHALL capture identity of the user.	2404
	4. The system SHALL capture identity of the system.	2405
	5. The system SHALL capture the event initiating audit trigger.	2406
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2407
	7. The system SHALL capture identity of the location (i.e., network address).	2408
	8. The system SHALL capture backup success or failure.	2409
TI.2.1.3.5 Function Back Up Recovery Started System Audit Trigger		2410
	Statement: Manage Audit Trigger initiated to track back-up recovery started event. **Description:** Capture back-up recovery started event, both routine and exceptional, including key metadata (who, what, when, where, why).	
	1. The system SHALL audit each occurrence when database recovery is initiated.	2411
	2. The system SHALL capture identity of the organization.	2412
	3. IF known, THEN the system SHALL capture identity of the user.	2413
	4. The system SHALL capture identity of the system.	2414
	5. The system SHALL capture the event initiating audit trigger.	2415
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2416
	7. The system SHALL capture identity of the location (i.e., network address).	2417
TI.2.1.3.6 Function Back Up Recovery Completed System Audit Trigger		2418
	Statement: Manage Audit Trigger initiated to track back-up recovery completed event. **Description:** Capture back-up recovery completed event, both routine and exceptional, including key metadata (who, what, when, where, why).	

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	1. The system SHALL audit each occurrence when database recovery is completed.	2419
	2. The system SHALL capture identity of the organization.	2420
	3. IF known, THEN the system SHALL capture identity of the user.	2421
	4. The system SHALL capture identity of the system.	2422
	5. The system SHALL capture the event initiating audit trigger.	2423
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2424
	7. The system SHALL capture identity of the location (i.e., network address).	2425
	8. The system SHALL capture backup recovery success or failure.	2426
TI.2.1.3.7 Function Batch Job Started System Audit Trigger		2427
Statement: Manage Audit Trigger initiated to track batch job started event. **Description:** Capture system batch job started event, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence when a batch job is initiated.	2428
	2. The system SHALL capture identity of the organization.	2429
	3. IF known, THEN the system SHALL capture identity of the user.	2430
	4. The system SHALL capture identity of the system.	2431
	5. The system SHALL capture the event initiating audit trigger.	2432
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2433
	7. The system SHALL capture identity of the location (i.e., network address).	2434
TI.2.1.3.8 Function Batch Job Completed System Audit Trigger		2435
Statement: Manage Audit Trigger initiated to track batch job completed event. **Description:** Capture batch job completed event, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence when a batch job is completed.	2436
	2. The system SHALL capture identity of the organization.	2437
	3. IF known, THEN the system SHALL capture identity of the user.	2438
	4. The system SHALL capture identity of the system.	2439
	5. The system SHALL capture the event initiating audit trigger.	2440
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2441
	7. The system SHALL capture identity of the location (i.e., network address).	2442
TI.2.1.3.9 Function Maintenance Started System Audit Trigger		2443
Statement: Manage Audit Trigger initiated to track maintenance started event. **Description:** Capture maintenance started event, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence when maintenance is initiated, including down time.	2444
	2. The system SHALL capture identity of the organization.	2445
	3. IF known, THEN the system SHALL capture identity of the user.	2446
	4. The system SHALL capture identity of the system.	2447
	5. The system SHALL capture the event initiating audit trigger.	2448
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2449
	7. The system SHALL capture identity of the location (i.e., network address).	2450
TI.2.1.3.10 Function Maintenance Completed System Audit Trigger		2451
Statement: Manage Audit Trigger initiated to track maintenance completed event. **Description:** Capture maintenance completed event, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence when maintenance is completed, including restart from down time.	2452
	2. The system SHALL capture identity of the organization.	2453

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	3. IF known, THEN the system SHALL capture identity of the user.	2454
	4. The system SHALL capture identity of the system.	2455
	5. The system SHALL capture the event initiating audit trigger.	2456
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2457
	7. The system SHALL capture identity of the location (i.e., network address).	2458
TI.2.1.3.11 Function Resource Usage System Audit Trigger		2459
Statement: Manage Audit Trigger initiated to track resource usage event. **Description:** Capture resource usage event, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit usage of system resources (access, computational, storage, network) according to scope of practice, organizational policy, and/or jurisdictional law.	2460
	2. The system SHALL capture identity of the organization.	2461
	3. IF known, THEN the system SHALL capture identity of the user.	2462
	4. The system SHALL capture identity of the system.	2463
	5. The system SHALL capture the event initiating audit trigger.	2464
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2465
	7. The system SHALL capture identity of the location (i.e., network address).	2466
TI.2.1.3.12 Function System Maintenance Events -Local Access System Audit Trigger		2467
Statement: Manage Audit Trigger initiated to track system maintenance events -local access. **Description:** Capture system maintenance events -local access, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of a system maintenance event with local access.	2468
	2. The system SHALL capture identity of the organization.	2469
	3. IF known, THEN the system SHALL capture identity of the user.	2470
	4. The system SHALL capture identity of the system.	2471
	5. The system SHALL capture the event initiating audit trigger.	2472
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2473
	7. The system SHALL capture identity of the location (i.e., network address).	2474
TI.2.1.3.13 Function System Maintenance Events - Remote Access System Audit Trigger		2475
Statement: Manage Audit Trigger initiated to track system maintenance events -remote access. **Description:** Capture system maintenance events -remote access, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of a system maintenance event with remote access.	2476
	2. The system SHALL capture identity of the organization.	2477
	3. IF known, THEN the system SHALL capture identity of the user.	2478
	4. The system SHALL capture identity of the system.	2479
	5. The system SHALL capture the event initiating audit trigger.	2480
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2481
	7. The system SHALL capture identity of the location (i.e., network address).	2482
TI.2.1.3.14 Function System Maintenance - EHR or Clinical Software System Audit Trigger		2483
Statement: Manage Audit Trigger initiated to track system maintenance - EHR or clinical software. **Description:** Capture system maintenance - EHR or clinical software, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of a system maintenance event when EHR or clinical software is updated or re-configured.	2484

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	2. The system SHALL capture identity of the organization.	2485
	3. IF known, THEN the system SHALL capture identity of the user.	2486
	4. The system SHALL capture identity of the system.	2487
	5. The system SHALL capture the event initiating audit trigger.	2488
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2489
	7. The system SHALL capture identity of the location (i.e., network address).	2490
TI.2.1.3.15 Function System Maintenance - Codes, Vocabulary, Knowledge, Rules System Audit Trigger		2491
Statement: Manage Audit Trigger initiated to track system maintenance of codes, vocabulary, knowledge and rules. **Description:** Capture system maintenance of codes, vocabulary, knowledge and rules - both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of a system maintenance event when codes, classification schemes, knowledge bases, clinical or business practice rules are updated or re-configured.	2492
	2. The system SHALL capture identity of the organization.	2493
	3. IF known, THEN the system SHALL capture identity of the user.	2494
	4. The system SHALL capture identity of the system.	2495
	5. The system SHALL capture the event initiating audit trigger.	2496
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2497
	7. The system SHALL capture identity of the location (i.e., network address).	2498
TI.2.1.3.16 Function Data Corruption System Audit Trigger		2499
Statement: Manage Audit Trigger initiated to track data corruption events. **Description:** Capture data corruption event, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence or detection of data corruption.	2500
	2. The system SHALL capture identity of the organization.	2501
	3. IF known, THEN the system SHALL capture identity of the user.	2502
	4. The system SHALL capture identity of the system.	2503
	5. The system SHALL capture the event initiating audit trigger.	2504
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2505
	7. The system SHALL capture identity of the location (i.e., network address).	2506
TI.2.1.4 Function Clinical Audit Triggers		2507
Statement: Manage Clinical Audit Triggers **Description:** Clinical Audit Triggers are designed to capture certain clinical events, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL provide the capability to track all clinical alerts.	2508
	2. The system SHALL provide the capability to track all acknowledgements of clinically significant report changes.	2509
	3. The system SHOULD provide the ability to track when decision support alerts have been disabled.	2510
TI.2.1.4.1 Function Clinical Alerts Clinical Audit Trigger		2511
Statement: Manage Audit Trigger initiated to track clinical alerts. **Description:** Capture clinical alerts, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of a clinical alert according to scope of practice, organizational policy, and/or jurisdictional law.	2512
	2. The system SHALL capture identity of the organization.	2513
	3. IF known, THEN the system SHALL capture identity of the user.	2514
	4. The system SHALL capture identity of the system.	2515
	5. The system SHALL capture the event initiating audit trigger.	2516
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2517

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	7. The system SHALL capture identity of the location (i.e., network address).	2518
	8. The system SHOULD capture the rationale for the clinical alert.	2519
TI.2.1.4.2 Function Acknowledgements of Clinically Significant Report Changes Clinical Audit Trigger		2520
Statement: Manage Audit Trigger initiated to track acknowledgement of clinically significant report changes. **Description:** Capture acknowledgement of clinically significant report changes, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence of an acknowledgement of clinically significant report changes according to scope of practice, organizational policy, and/or jurisdictional law.	2521
	2. The system SHALL capture identity of the organization.	2522
	3. IF known, THEN the system SHALL capture identity of the user.	2523
	4. The system SHALL capture identity of the system.	2524
	5. The system SHALL capture the event initiating audit trigger.	2525
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2526
	7. The system SHALL capture identity of the location (i.e., network address).	2527
	8. The system SHOULD capture the rationale for significant report changes.	2528
TI.2.1.4.3 Function Disable Decision Support Alerts Clinical Audit Trigger		2529
Statement: Manage Audit Trigger initiated to track disabling of decision support alerts. **Description:** Capture disabling of decision support alerts, both routine and exceptional, including key metadata (who, what, when, where, why).		
	1. The system SHALL audit each occurrence when decision support alerts are disabled according to scope of practice, organizational policy, and/or jurisdictional law.	2530
	2. The system SHALL capture identity of the organization.	2531
	3. IF known, THEN the system SHALL capture identity of the user.	2532
	4. The system SHALL capture identity of the system.	2533
	5. The system SHALL capture the event initiating audit trigger.	2534
	6. The system SHALL capture the date and time of the event initiating audit trigger.	2535
	7. The system SHALL capture identity of the location (i.e., network address).	2536
	8. The system SHALL capture the rationale for disabling clinical alerts.	2537
TI.2.2 Function Audit Log Management		2538
Statement: Manage Audit Log **Description:** Audit Triggers create Audit Log entries. Audit Log entries are typically managed as persistent evidence of events occurring over time, including events pertaining to record management, security, system operations and performance, key clinical situations.Audit log entries capture event details, including key metadata (who, what, when, where).Audit log functions fulfill log maintenance and persistence requirements according to scope of practice, organizational policy, and jurisdictional law.		
	1. The system SHALL provide the ability to capture audit log entries using a standards-based audit record format according to scope of practice, organizational policy, and/or jurisdictional law (e.g., IETF RFC 3881 "Internet Engineering Task Force, Request For Comment, Security Audit and Access Accountability Message XML Data Definitions for Healthcare Applications").	2539
	2. The system SHOULD provide the ability to annotate or tag previously recorded audit log entries.	2540
	3. The system SHOULD provide the ability to securely store audit log entries metadata including related metadata.	2541
	4. The system SHALL provide the ability to log access to audit log entries, and/or metadata.	2542
TI.2.2.1 Function Audit Log Indelibility		2543
Statement: Manage Audit Log Indelibility **Description:** Audit logs must be maintained in a persistent and indelible form according to scope of practice, organizational policy, and jurisdictional law.		
	1. The system SHALL manage each Audit Log entry as a persistent, indelible (unalterable) data object including all metadata.	2544
TI.2.3		2545

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Function Audit Notification and Review		
	Statement: Notify of Audit Events, Review Audit Log **Description:** EHR system functions allow various methods of critical event notification (from audit triggers) as well as routine log review.Audit log notification and review functions implement requirements according to scope of practice, organizational policy, and jurisdictional law.	
	1. The system SHALL provide the ability to render a report based on audit log entries.	2546
	2. The system SHALL provide the capability to generate reports based on ranges of system date and time that audit log entries were captured.	2547
	3. The system SHOULD provide the ability to render audit log entry time stamps using UTC (based on ISO 8601).	2548
	4. The system SHALL allow emergency access log entry review based on criteria such as individual assignment or specified role, reasons, patient information/record entries according to organizational policy, and/or jurisdictional law.	2549
TI.3 Function Registry and Directory Services		2550
	Statement: Enable the use of registry services and directories to uniquely identify, locate and supply links for retrieval of information related to:- patients and providers for healthcare purposes; - payers, health plans, sponsors, and employers for administrative and financial purposes; - public health agencies for healthcare purposes, and- healthcare resources and devices for resource management purposes. **Description:** Registry and directory service functions are critical to successfully managing the security, interoperability, and the consistency of the health record data across an EHR-S. These services enable the linking of relevant information across multiple information sources within, or external to, an EHR-S for use within an application. This applies to directories/registries internal to the EHR-S as well as directories/registries external to the EHR-S . Transmission may occur automatically or manually and may include small or large amounts of data. Directories and registries support communication between EHR Systems and may be organized hierarchically or in a federated fashion. For example, a patient being treated by a primary care physician for a chronic condition may become ill while out of town. The new provider's EHR-S interrogates a local, regional, or national registry to find the patient's previous records. From the primary care record, a remote EHR-S retrieves relevant information in conformance with applicable patient privacy and confidentiality rules.An example of local registry usage is an EHR-S application sending a query message to the Hospital Information System to retrieve a patient's demographic data.	
	1. The system SHALL provide the ability to manage internal registry services and directories.	2551
	2. The system SHALL provide the ability to exchange information with external registry services and directories.	2552
	3. The system SHALL provide the ability to securely exchange information with external registry services and directories.	2553
	4. The system SHALL conform to function TI.5.1 (Application and Structured-Document Interchange Standards) to exchange information with external registry services and directories.	2554
	5. The system SHOULD capture and render local registry services and directory information through standards-based interfaces.	2555
	6. IF the system communicates with external registry services and directories (i.e., external to an EHR-S), THEN the system SHOULD capture and render information using standards-based interfaces.	2556
	7. The system SHOULD provide the ability to determine the unique identity of a patient through the use of internal, and/or external registry services or directories.	2557
	8. The system MAY provide the ability to determine links to healthcare information regarding a patient through the use of internal, and/or external registry services or directories.	2558
	9. The system MAY provide the ability to determine the unique identity of a provider through the use of internal, and/or external registry services or directories.	2559
	10. The system MAY provide the ability to determine the identity of payers, health plans and sponsors for administrative or financial purposes through the use of internal, and/or external registry services or directories.	2560
	11. The system MAY provide the ability to determine the identity of employers for administrative or financial purposes through the use of internal, and/or external registry services or directories.	2561
TI.4 Function Standard Terminology and Terminology Services		2562
	Statement: Support semantic interoperability through the use of standard terminologies, standard terminology models and standard terminology services. **Description:** The purpose of supporting terminology standards and services is to enable semantic interoperability. Interoperability is demonstrated by the consistency of human and machine interpretation of shared data and reports. It includes the capture and support of consistent data for templates and decision support logic.Terminology standards pertain to concepts, representations, synonyms, relationships and computable (machine-readable) definitions. Terminology services provide a common way for managing and retrieving	

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these items, including historically correct version interpretation. Terminology services need to support legal requirements for retrospective health record information and system data.		
TI.4.1 Function Standard Terminology and Terminology Models		2565
Statement: Employ approved standard terminologies to ensure data correctness and to enable semantic interoperability (both within an enterprise and externally).Support a formal standard terminology model. **Description:** Semantic interoperability requires standard terminologies combined with a formal standard information model. An example of an information model is the HL7 Reference Information Model. Another example is the ISO/EN 13606 Electronic Health Record Communication.A terminology provides semantic and computable identity to its concepts. Examples of terminologies that an EHR-S may support include: LOINC, SNOMED, ICD-9, ICD-10, and CPT-4.Terminologies are use-case dependent and may or may not be realm dependent. The key is that the standard be approved by all stakeholders. For example, terminologies for public health interoperability may differ from those for healthcare quality, administrative reporting, research, etc.Formal standard terminology models enable common semantic representations by describing relationships that exist between concepts within a terminology or in different terminologies, such as exemplified in the model descriptions contained in the HL7 Common Terminology Services specification.The clinical use of standard terminologies is greatly enhanced with the ability to perform hierarchical inference searches across coded concepts. Hierarchical Inference enables searches to be conducted across sets of coded concepts stored in an EHR-S. Relationships between concepts in the terminology are used in the search to recognize child concepts of a common parent. For example, there may be a parent concept, "penicillin containing preparations" which has numerous child concepts, each of which represents a preparation containing a specific form of penicillin (Penicillin V, Penicillin G, etc.). Therefore, a search may be conducted to find all patients taking any form of penicillin preparation.Clinical and other terminologies may be provided through a terminology service internal or external to an EHR-S.		
	2. The system SHALL determine that clinical terms and coded clinical data exist in an approved standard terminology.	2564
	3. The system SHOULD provide the ability to receive and transmit healthcare data using formal standard information models and approved standard terminologies according to scope of practice, organizational policy, and/or jurisdictional law.	2568
	4. The system SHOULD provide the ability to manage data using a formal standard terminology model according to scope of practice, organizational policy, and/or jurisdictional law.	2569
	5. The system SHOULD provide the ability to determine hierarchical inferences (e.g., subsumption across coded terminology concepts that are expressed using standard terminology models).	2570
	6. The system SHALL provide the ability to manage terminology assets and supporting tools (internal or external to the EHR-S).	2571
	7. IF there is no recognized-standard terminology model available, THEN the system MAY provide the ability to manage data using a locally-defined standard terminology model.	2572
	8. The system SHOULD provide the ability to capture information into structured data formats using approved standard terminologies without the user requiring knowledge of the terminologies used.	2573
	9. The system SHOULD provide the ability to enter data using content that is common to the user, and allow for collection and presentation of text form data to meet the pre-determined purposes of others. Text forms should exclude cryptic or uncommon abbreviations.	2574
	10. The system SHOULD have the ability to present standard terminology terms in a language which is appropriate for the user.	2575
TI.4.2 Function Maintenance and Versioning of Standard Terminologies		2576
Statement: Enable version control according to scope of practice, organizational policy, and/or jurisdictional law to ensure maintenance of utilized standard terminologies.This includes the ability to accommodate changes to terminology sets as the source terminology undergoes its natural update process (new codes, retired codes, redirected codes). Such changes need to be cascaded to clinical content embedded in templates, custom formularies, etc., as determined by existing policy. **Description:** Version control allows for multiple sets or versions of the same terminology to exist and be distinctly recognized over time. Standard terminologies are usually periodically updated, and concurrent use of different versions may be required. Ideally, the meaning of a concept never changes over time, but a concept can be deprecated, and replaced with a new concept in a new version. However, in some terminologies, the meaning of a concept can change over time. In any case, it is important that retrospective analysis and research maintains the ability to relate to the appropriate conceptual meaning. If the terminology encoding for a concept changes over time, it is also important that for legal health records, as well as for retrospective analysis and research, the different encodings can be correlated to ensure the permanence of the concept as originally captured. This does not necessarily imply that complete older versions of the terminology be kept in the EHR-S, only access to the changes needs to be maintained.		
	1. The system SHALL provide the ability to manage data using different versions of standard terminologies.	2577
	2. The system SHALL provide the ability to update standard terminologies.	2578
	3. The system SHOULD maintain relationships among versions of a standard terminology to allow preservation of interpretation over time.	2579
	4. The system SHOULD provide the ability to receive and harmonize data from and transmit data to other systems that use known different versions of a terminology standard while preserving the meaning of that data.	2580

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	5. The system SHALL provide the ability to update terminologies to a deprecated status.	2581
	6. The system SHALL provide the ability to update individual codes within a terminology to a deprecated status.	2582
	7. The system SHALL provide the ability to update terms with their equivalent when terminology is changed, where coded terminology content is embedded in clinical models (e.g., templates and custom formularies), when the terminology changes can be accomplished unambiguously, and if consistent with scope of practice, organizational policy, and/or jurisdictional law.	2583
	8. The system SHALL provide the ability to update standard terminologies used to enter clinical content (via templates, custom formularies, etc.)	2584
	9. The system SHALL maintain an audit log or a change history of code system to the individual code level, for versions used, dates implemented and updated to enable correct interpretation of historical data over time.	2585
TI.4.3 Function Terminology Mapping		2586

Statement: Map or translate one terminology to another as needed by local, regional, national, or international interoperability requirements.

Description: The ability to map or translate one terminology to another is fundamental to an organization in an environment where several terminologies are in play to meet different purposes. It is a common occurrence that data is captured using one terminology, but is shared using another terminology.Example: Within a healthcare organization there may be a need to map terminology concepts with the same semantic meaning to meet different purposes (e.g., between an EHRS and an external laboratory system, or between an EHRS and a billing system). Standard terminologies are evolving and maps will need to be adjusted to support this evolution and more sophisticated use of standard terminologies and maps over time.Realm specific (including local, regional, national or international) interoperability requirements can also determine the need for terminology mapping, and in many cases terminology mapping services (internal or external) can be used to satisfy these requirements.The interaction and mapping of terminologies may be called into question in a legal proceeding, when clinical decisions were documented or when semantic meaning could be misinterpreted. It is important to seek guidance, document and retain all mapping decisions for all types of terminology mapping, and to recognize when mapping may not be possible from one concept to another. The quality of mapping is dependent upon the skills and interpretation of standard terminologies and clinical information by mapping experts.

	1. The system SHALL provide the ability to manage data using terminology maps which may be provided by terminology mapping services (internal or external).	2587
	2. The system SHOULD provide the ability to update terminology maps using standard terminology services (internal or external).	2588
	3. The system SHOULD provide the ability to render data quality and technical quality reports for a user to determine the validity of terminology mappings using approved mapping techniques.	2589
	4. The system MAY provide the ability for a user to maintain custom terminology maps using approved mapping techniques where formal standard terminology maps are unavailable.	2590
	5. The system MAY provide the ability for a user to maintain custom terminology maps to formal standard terminology maps to support historical data use.	2591
TI.5 Header Standards-Based Interoperability		2592

Statement: Provide automated health care delivery processes and seamless exchange of clinical, administrative, and financial information through standards-based solutions.

Description: Interoperability standards enable certain applications to be shared among EHR systems, resulting in a unified (logical) view of a given EHR system where several disparate systems may actually be participating transparently. Interoperability standards also enable certain information to be shared among EHR systems (including information that resides in regional, national, or international information exchanges). Interoperability standards also promote timely and efficient information capture, use, and re-use, often reducing the cumulative workload of the broad set of stakeholders.When health-related information is exchanged -- or when external applications are used to extend an EHR system -- the interoperability methods and underlying standards that were used in the process may need to be disclosed during a legal proceeding (especially when the resulting information becomes part of the patient's medical record).

TI.5.1 Header Application, Structured-Message, and Structured-Document Interchange Standards		2593

Statement: Support an EHR system's ability to operate seamlessly with systems that adhere to recognized application interchange standards. These systems include other EHR systems, subcomponents of an EHR system, or other (authorized, non-EHR) systems.

Description: Since a health care organization typically has various external and internal interoperability requirements, it must use a set of corresponding interoperability or interchange standards that will meet its connectivity and information structure, format, and semantic requirements. Information should be exchanged -- and applications should provide functionality -- in a manner that appears to be seamless to the user. To be specific, if data is received from an external source that requires a user to manually copy-and-paste that data into multiple parts of the system, the exchange is not considered to be "seamless".

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Examples of standards-based EHR information content and exchange methods include: standards-based data extracts, standards-based messages, standards-based documents (e.g., HL7 Clinical Document Architecture (CDA) documents), standards-based healthcare transactions, and standards-based images (e.g., Digital Imaging and Communication in Medicine (DICOM) documents).

Support for multiple interaction modes is needed to respond to differing levels of immediacy and types of exchange. For example, messaging is effective for many near-real time, asynchronous data exchange scenarios but may not be appropriate if the end-user is requesting an immediate response from a remote application.

A variety of interaction modes are typically supported such as:

- Unsolicited Notifications (e.g., Adam Everyman has arrived at the clinic for his scheduled appointment);
- Query/Response (e.g., Query: Is Adam Everyman known to the system? Response: Yes, Adam's medical record number is 12345678);
- Service Request and Response (e.g., Request: Laboratory Order for “Fasting Blood Sugar”. Response: the results of the test);
- Information Interchange between organizations (e.g., in a regional health exchange or in a national health system);
- Structured/discrete clinical documents (e.g., a structured clinical note);
- Unstructured clinical document (e.g., dictated surgical note).

Standard terminology is a fundamental part of interoperability and is described in section TI.4. Using a formal explicit information model further optimizes interoperability. An example of an information model is the HL7 Reference Information Model (RIM). Organizations typically need to deal with more than one information model and may need to develop a mapping between information models, a meta-model (that helps to explain and organize the various information models), or both.

TI.5.1.1 Function Application Interchange Standards		2594

Statement: Support the ability to operate seamlessly with other systems by using applications, and/or structured messages and documents that adhere to interchange standards.

Description: Placeholder - Not Defined at this time

	1. The system SHALL provide the ability to receive and transmit information using interchange standards as required by realm / local -specific profiles, and/or by recognized jurisdictional authorities.	2595
	2. The system SHALL provide the ability to seamlessly perform interchange operations with other systems that adhere to interchange standards as required by realm / local -specific, and/or by recognized jurisdictional authorities.	2596
	3. The system SHALL conform to TI.4 (Standard Terminology and Terminology Services) including all child-functions, to support terminology standards according to scope of practice, organizational policy, and/or jurisdictional law.	2597
	4. IF a standard information model is not available, THEN the system SHOULD provide the ability to exchange information with other systems in a seamless manner by using a formal explicit information model.	2598
	5. The system MAY provide the ability to exchange information with other systems by using an explicit formal information model, and/or by using a standard coded terminology.	2599
	6. The system SHALL provide the ability to receive and transmit data using standard, coded terminology.	2600
	7. The system SHOULD provide the ability to export data using an explicit and formal information model in accordance with industry and governmental-mandated standards.	2601
	8. The system SHOULD have the capability to import data using an explicit and formal information model in accordance with industry and governmental-mandated standards.	2602
	9. The system SHOULD have the ability to harmonize data with another system.	2603
	10. The system SHOULD have the ability to determine whether the information transmitted to another system has been successfully received by that other system.	2604
	11. The system SHALL store a log record of each data exchange (transaction) when transmitting information with external systems.	2605

TI.5.1.2 Function Structured-Document Interchange Standards		2606

Statement: Support the management of structured documents.

Description: Structured documents are an important method of facilitating the exchange of information to support care. Documents are often considered to be more permanent in nature; messages are often considered to be more transitory in nature.

	1. The system SHALL provide the ability to receive, maintain and transmit structured documents.	2607

TI.5.1.3 Function Structured-Message Interchange Standards		

Statement: Support the management of structured messages.

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	Description: Structured messages are an important method of facilitating the exchange of information to support care. Messages are often considered to be more transitory in nature; documents are often considered to be more permanent in nature.	
	1. The system SHALL provide the ability to manage structured messages according to scope of practice, organizational policy, and/or jurisdictional law.	0
TI.5.2 Function Interchange Standards Versioning and Maintenance		2608
	Statement: Support various versions of an interchange standard. **Description:** Interchange standards characteristically change throughout their lifecycles; those changes are often tagged with "version" numbers. EHR systems need to control the various versions of interchange standards that are used within an EHR implementation and accommodate changes that arise with each version.For example, if an organization migrates to version 2.5 of HL7's messaging standard, it may choose to utilize that version's specimen or blood bank information capabilities. The organization may also find that certain fields have been retained for backwards compatibility only or withdrawn altogether. The EHR-S needs to be able to handle all of these possibilities.Standards typically evolve in such a way as to protect backwards compatibility. On the other hand, sometimes there is little, or no, backwards compatibility when an organization may need to replace an entire standard with a new methodology. An example of this is migrating from HL7 v2 to HL7 v3.Interchange standards that are backward compatible support exchange among senders and receivers who are using different versions. Version control ensures that those sending information in a later version of a standard consider the difference in information content that can be interchanged effectively with receivers, who are capable of processing only earlier versions. That is, senders need to be aware of the information that receivers are unable to capture and adjust their business processes accordingly. Version control enables multiple versions of the same interchange standard to exist and be distinctly recognized over time. Since interchange standards are usually periodically updated, concurrent use of different versions may be required.Large (and/or federated) organizations typically need to use different versions of an interchange standard to meet internal organizational interoperability requirements.For example, the enterprise-wide standard might use HL7 v2.5 for laboratory messages, but some regions of the enterprise might be at a lower level.It should be possible to retire deprecated interchange standards versions when applicable business cycles are completed while maintaining obsolete versions. An example use of this is for possible claims adjustment throughout the claim's life cycle.When interchange standards change over time, it is important that retrospective analysis and research correlate and note gaps between the different versions' information structures to support the permanence of concepts over time.	
	1. The system SHALL provide the ability to use different versions of interchange standards.	2609
	2. The system SHALL provide the ability to change (reconfigure) the way that data is transmitted as an interchange standard evolves over time and in accordance with business needs.	2610
	3. The system SHOULD provide the ability to deprecate an interchange standard.	2611
	4. The system SHOULD provide the ability to integrate with other systems that use previously-supported versions of an interoperability standard according to scope of practice, organizational policy, and/or jurisdictional law.	2612
TI.5.3 Function Standards-Based Application Integration		2613
	Statement: Integrate applications in a standards-based manner. **Description:** An EHR-S often consists of multiple applications. Some of those applications may be within the EHR-S; others may be external to the EHR-S. The user of the EHR-S often benefits when those applications are integrated. Application integration can be accomplished in an ad-hoc fashion or in a standards- based fashion.The method(s) by which applications may be integrated within an organization depends on that organization's approach to application integration. A given organization could conceivably employ multiple application integration approaches to meet various application integration requirements.	
	1. The system SHALL provide the ability to integrate applications in a standards-based fashion when the system is composed of, and/or is extended by disparate applications.	2614
	2. The system SHOULD provide the ability to integrate user (or system) authentication for the purposes application context management (e.g., Graphical User Interface application integration via HL7's Context Management Standard from the Clinical Context Object Work Group (CCOW)).	2615
TI.5.4 Function Interchange Agreements		2616
	Statement: Support the use of Interchange Agreements to specify the rules, responsibilities, expectations, and methods by which Interchange Agreement partners may exchange information. **Description:** Systems that wish to communicate with each other must agree on certain parameters/criteria that will govern an information exchange process. Interchange agreements enable partnering systems to discover, negotiate, and utilize those parameters/criteria. An EHR-S can use this information to define how data will be exchanged between the sending and the receiving partners. Interchange services and capabilities can be discovered in an automated fashion.Entity directories can be used to determine the address, profile, and data exchange requirements of known, and/or potential Interchange Agreement partners. Entity registries can be used to determine the security, addressing, and reliability requirements between potential Interchange Agreement partnering systems.	
	1. The system SHALL exchange information with Interchange Agreement partners based on interoperability agreement descriptions.	2617

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	2. IF an interchange agreement description specifies the use of a certain standard, THEN the system SHOULD exchange information using the standard specified by the interchange agreement description according to scope of practice, organizational policy, and/or jurisdictional law.	2618
	3. The system MAY conform to function TI.3 (Registry and Directory Services) to interact with registries, and/or directories to determine the address, profile, and data exchange requirements of known, and/or potential partners.	2619
	4. The system MAY analyze and present interchange service descriptions and capabilities according to scope of practice, organizational policy, and/or jurisdictional law.	2620
	5. The system SHOULD provide the ability to manage Interchange Agreements that have been established with Interchange Agreement partners.	2621
TI.5.5 Function System Integration		2622

Statement: Support the integration of the EHR system with related systems.

Description: Within a given organization (for example, an institution, facility , or integrated care-delivery network), an EHR system may be directly integrated with other systems (for example, a laboratory Information System, Radiology System, Pharmacy System, or Hospital Information System). Conversely, an EHR system may access these other systems indirectly by integrating with a system that serves as the central routing mechanism for the organization. For example, the EHR system may be integrated with the Hospital Information System which then routes the EHR system's orders to a laboratory , pharmacy, or radiology service.

Depending on the type of information that is exchanged within an integrated-system environment, certain heuristics may be needed that will help govern the information exchange process.

	1. The system SHALL provide the ability to integrate the EHR system with other systems (e.g., a laboratory Information System, Radiology System, Pharmacy System, or Hospital Information System) according to scope of practice, organizational policy, and/or jurisdictional law.	2623
	2. The system SHOULD provide the ability to exchange discrete information (e.g., problem list, medication, and/or allergy information) with an integrated system data repository.	2624
	3. The system SHOULD provide the ability to exchange clinical documents with an integrated system Clinical Document Repository.	2625
	4. The system MAY exchange information with systems that are integrated with the EHR system using heuristics that are defined by, and according to scope of practice, organizational policy, and/or jurisdictional law.	2626
TI.6 Function Business Rules Management		2627

Statement: Manage the ability to create, update, delete, view, and version business rules including institutional preferences. Apply business rules from necessary points within an EHR-S to control system behavior. An EHR-S audits changes made to business rules, as well as compliance to and overrides of applied business rules.

Description: EHR-S business rule implementation functions include decision support, diagnostic support, workflow control, and access privileges, as well as system and user defaults and preferences. An EHR-S supports the ability of providers and institutions to customize decision support components such as triggers, rules, or algorithms, as well as the wording of alerts and advice to meet realm specific requirements and preferences.

	1. The system SHALL provide the ability to manage business rules.	2628
	2. The system SHOULD provide the ability to enter, import, or receive business rules to guide system behavior.	2629
	3. The system SHOULD provide the ability to maintain business rules and their components.	2630
	4. The system SHOULD provide the ability to tag decision support rules as inactive / obsolete or to remove them according to scope of practice, organizational policy, and/or jurisdictional law.	2631
	5. The system SHOULD support the ability to render business rules.	2632
	6. The system SHOULD provide the ability to manage diagnostic decision support rules that guide system behavior according to scope of practice, organizational policy, and/or jurisdictional law.	2633
	7. The system SHOULD provide the ability to manage workflow control rules that guide system behavior according to scope of practice, organizational policy, and/or jurisdictional law.	2634
	8. The system SHOULD provide the ability to manage access privilege rules that guide system behavior according to scope of practice, organizational policy, and/or jurisdictional law.	2635
	9. The system SHOULD provide the ability to manage other rules (for example, monitoring rules, user defaults rules and preferences rule) that guide system behavior according to scope of practice, organizational policy, and/or jurisdictional law.	2636
	10. The system SHALL provide the ability to determine system behavior based upon defined business rules.	2637
TI.7 Function Workflow Management		2638

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	Statement: Support workflow management functions including both the management and set up of work queues, personnel lists, and system interfaces as well as the implementation functions that use workflow-related business rules to direct the flow of work assignments. **Description:** Workflow management functions that an EHR-S supports include:-Distribution of information to and from internal and external parties;-Support for task-management as well as parallel and serial task distribution;-Support for notification and task routing based on system triggers; and-Support for task assignments, escalations and redirection in accordance with business rules.Workflow definitions and management may be implemented by a designated application or distributed across an EHR-S.	
	1. The system SHALL provide the ability to manage workflow business rules including work queues, personnel lists, and system interfaces.	2639
	2. The system SHOULD provide the ability to determine workflow assignments based on workflow-related business rules.	2640
	3. The system MAY provide the ability to manage human resources (i.e., personnel lists) for workflow queues.	2641
	4. The system MAY exchange information with external systems (for example, Human Resources system or Staff Management system) to support the management of human resources.	2642
	5. The system MAY exchange information with external systems (for example, Human Resources system or Staff Management system) to support the management of workflow queues (task lists).	2643
	6. The system MAY provide the ability to exchange workflow related information with an external system.	2644
	7. The system MAY provide the ability to render notifications and tasks based on system triggers.	2645
	8. The system MAY determine and render an updated priority of tasks on the workflow (task list) queue in accordance with business rules, and according to scope of practice, organizational policy, and/or jurisdictional law.	2646
	9. The system MAY determine and render an update to the tasks, and/or execution path on the workflow (task list) queue in accordance with business rules, and according to scope of practice, organizational policy, and/or jurisdictional law.	2647
	10. The system MAY determine and render an update to the assignment of the resources to workflow (task list) queue in accordance with business rules, and according to scope of practice, organizational policy, and/or jurisdictional law.	2648
	11. The system SHOULD provide the ability to render a notification of a workflow update.	2649
	12. The system MAY provide the ability to render a notification of a workflow update including the details of the update.	2650
	13. The system SHOULD provide the ability to transmit a workflow (task list) queue update request to an external system.	2651
	14. The system SHOULD provide the ability to receive a workflow (task list) queue update response from an external system.	2652
TI.8 Function Database Backup and Recovery		2653
	Statement: Provide for the ability to backup and recover the EHR system. **Description:** To enable the preservation of the EHR database and it's data, functionality needs to be present to record a copy of the database and it's contents to offline media as well as the recovery of the system from a backup copy and resumption of normal system operation. The backup must preserve both data as well as database structure and definition information sufficient to recover a complete functional EHR system. Database components may include, but not be limited to application data, security credentials, log/audit files, and programs; ultimately all EHR components necessary to provide a full and complete operating environment. Finally, the backup must be capable of being used during recovery processing to restore an exact copy of the EHR system as of a particular instant in time. This is a requirement to be able to preserve logical consistency of information within the recovered EHR system.In providing for this capability the system may Include multiple backup, and/or redundancy solutions such as fail-over architecture, database journaling, transaction processing, etc.The backup and recovery function must address both physical system failure (i.e. failure of EHR system hardware) as well as logical system failure (e.g., database corruption).To support the requirement that the EHR system be available whenever it is needed within the design parameters of the system and provide reliability and redundancy of the EHR database and it's data, the backup function shall not impact user functionality or appreciably impact user performance.The backup function may include features which permit multiple processes and technologies to perform it's task. This may include multiple backup technologies such as tape, disk, cloud, etc. Also, multiple architectures such as redundancy, online, near-line and off-line media.	
	1. The system SHALL provide the ability to backup and recover EHR information according to scope of practice, organizational policy, and/or jurisdictional law.	2654
	2. The system SHALL provide the ability to backup and recover all database contents including programs and all software components necessary to permit a complete EHR to be recovered. (i.e., 'full' backup and recovery)	2655
	3. The system MAY provide the ability to backup and recover EHR information using alternative backup methods in addition to a full backup/recovery (e.g., incremental, differential, reverse delta, or continuous).	2656
	4. The system MAY provide the ability to backup EHR information according to a defined schedule of storage media rotation.	2657

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	5. IF the EHR user requirements specify that the EHR system be available continuously, THEN the system SHALL provide the ability to backup EHR information concurrently with the normal operation of the EHR application.	2658
	6. The system SHOULD provide the ability to backup EHR information to a remote location.	2659
	7. The system MAY provide the ability to backup EHR information to more than one storage media (e.g., disk, tape, or cloud).	2660
	8. The system MAY provide the ability to encrypt backup data.	2661
TI.9 Function System Management Operations and Performance		2662
Statement: Manage the change of status of an external facility and the ability to access, render and determine information related to Service Level Agreement. **Description:** A health care delivery relies on services provided by other external facilities such as laboratories or Long Term Care facilities. The status of those facilities is subject to change for example: power outage, flooding or overcapacity. Therefore, the EHR system needs to capture the status of the external facilities, notify appropriate individuals / organizations or even change the workflow based on established business rules. Change of the status of an external facility is patient safety concern because a provider may need to adjust patient care or care workflows accordingly. For example, changes of status of external facility include: laboratory no longer accredited, laboratory power outage, Long Term Care facility at overcapacity. If laboratory loses accreditation an administrator needs to be notified to adjust the workflow. If status change is anticipated on regular basis, the system may automatically trigger workflow adjustment according to established business rules that take into consideration the status of the external facility. The example for later, the local Long Term Care facility may routinely exceed the capacity on the weekends; therefore, the business rule will accommodate for automatic workflow adjustments. A provider may need to be aware of certain Service Level Agreement information in order to mitigate patient safety-related risks that depend on system availability or system performance.		
	1. The system SHOULD provide the ability to manage the change of status of an external facility.	2663
	2. The system SHOULD provide the ability to manage Service Level Agreement information according to scope of practice, organizational policy, and/or jurisdictional law.	2664
	3. The system MAY provide the ability to render system availability statistics and system performance statistics as specified in the Service Level Agreement according to scope of practice, organizational policy, and/or jurisdictional law.	2665

Annex C
(informative)

Glossary of Terms for EHR-S FM

Term	Definition	Reference
Accept DEPRECATED VERB	Instead, use ‘’PRESENT or RENDER a message of acceptance, based on the determination (ANALYZE and DECIDE) that the data is valid”. Adjust to the context.	
Access DEPRECATED VERB	Instead, use CONTROL-ACCESS if the context is one of controlling access to the system. Use RENDER or PRESENT or another relevant Action-Verb when the context is one of accessing data.	
Access control	A means of ensuring that the resources of a data processing system can be accessed only by authorized entities in authorized ways.	(ISO/IEC 2382-8, 1998)
Accountability	The property that ensures that the actions of an entity may be traced uniquely to that entity.	(ISO/IEC 2382-8, 1998) cited in ISO TS 18308
Active order	Active – In a state of action. Order – Request for a certain procedure to be performed.	America Heritage Dictionary, Second College Edition, Houghton Mifflin Company, Boston, 1991.
Activity	See health care activity	
Actor (in the healthcare system)	Health professional, healthcare employee, patient/consumer, sponsored healthcare provider, healthcare organization, device or application that acts in a health related communication or service.	(ISO/TS 17090, 2001 – modified) cited in ISO TS 18308

Administrative-acceleration of registration	A delayed patient-registration workflow technique. Very useful for providing care in urgent situations, where life-saving activities supersedes patient-registration requirements.	
Advanced Directive	Advance directives are legal documents that allow an individual to convey his/her desires regarding end-of-life care including the use of antibiotics, tube feedings, and resuscitation. This document is not a healthcare power of attorney or a living will.	
Adverse reaction	An unintended result or effect that is undesirable and/or sometimes harmful.	
Adverse sensitivity	A condition expected to result in undesirable physiologic reaction to an amount of a substance that would not produce a reaction in most individuals.	
Affirm DEPRECATED VERB	Instead, use TAG (with an appropriate qualifier). Affirm, Assert, Declare, Indicate, and State are synonyms.	
After Action	Adjective typically used in conjunctions with report, briefing or other means of information dissemination. "An **after action review** is a structured review or de-brief process for analyzing *what* happened, *why* it happened, and *how* it can be done better, by the participants and those responsible for the project or event. Its use has extended to business as a knowledge management tool and a way to build a culture of accountability." "An **after action report** is any form of retrospective analysis on a given sequence of goal-oriented actions previously undertaken, generally by the author himself."	1. http://en.wikipedia.org/wiki/After_action_review 2. http://en.wikipedia.org/wiki/After_action_report
Aggregate (Population Health context)	A collection of individuals, families, or other groupings that is associated because of similar social, personal, health care, or other needs or interests. The grouping exists for the purpose of providing a single measurement or observation for statistical analysis. For example, "left-handed patients were ten percent more likely to receive flu immunizations than right-handed people at the Main Street Clinic last year". (Note: aggregate-level data is often de-identified within the Population Health context.)	Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition. © 2003, an imprint of Elsevier, Inc.
Aggregate data (IT context)	Data that has been collected from two or more sources.	Computer Desktop Encyclopedia copyright ©1981-2012 by The Computer Language Company Inc.
Alert (used as noun)	A type of Notice that requires recipient's action.	

Alert DEPRECATED VERB	Instead, use “RENDER or PRESENT or TRANSMIT an alert to a person or another system (including a device)”. An Alert typically occurs after analyzing some data and arriving at a decision that someone must be alerted. See DETERMINE for some examples.	
Allergy	An exaggerated immune response or reaction to a substance that is generally not harmful (Ref: MedLine Plus, US National Library of Medicine, NIH). The manifestation of an allergy includes a variety of physiologic responses (e.g. rash, itching, hypotension, anaphylaxis) and can be dependent on the route of exposure (inhalation, skin contact, ingestion).	
Amend DEPRECATED VERB	Instead, use EDIT.	
Analyze	To DETERMINE actions in the flow of processing data by comparing, correlating, or weighting certain data and by applying clinical or business rules, hence leading to a decision (see DECIDE). For example, the system may ANALYZE patient information using a drug-interaction database and a set of clinical rules. Another example is that the system may ANALYZE various protocols relative to a patient’s condition. Another example is that a person may ANALYZE a proposed update to a patient’s home address and DECIDE to reject the proposed update.	
Annotate	To UPDATE data by attaching comments or notes to the data without editing the data. For example, an Attending physician may ANNOTATE the information entered by the Resident physician before signing the report.	
Append DEPRECATED VERB	Instead, use the term EDIT. This means editing data by adding new data to existing data.	
Appropriate	A suitable, proper, or dependent context-sensitive identification, designation, or qualification. The term “appropriate” is used in this document to codify the need for flexibility to cover conditions that may be best resolved dynamically. The meaning of the term “appropriate” is clarified in this document by corresponding examples.	
Architecture	The structure of components, their inter-relationships, and the principles and guidelines governing their design and evolution over time	ISO 18308

Archive (verb)	To STORE data by moving the data to long-term storage media and deleting or purging data on the original online storage, according to scope of practice, organizational policy, and/or jurisdictional law. For example, the system at the Oak Street Hospital automatically ARCHIVES patient-related data that is older than eight years by encrypting and compressing it, moving it to long-term storage, purging it, identifying the data by month and year, and creating a pointer to the archived data. Another example is that a system may automatically ARCHIVE outpatient clinic schedules that are being replaced.	
Archive (noun)	The process of moving one or more EHR extracts to off-line storage in a way that ensures the possibility of restoring them to on-line storage when needed without loss of meaning. Wherever possible, archived data should be technology-independent so that future users do not have dependencies on obsolete technology from the past.	ISO TS 18308

Assent (Patient)	Assent "is to agree to something especially after thoughtful consideration".1 However, in clinical care this typically applies to patients with somewhat limited decision-making capability, such as children and those with some form of mental impairment (e.g. mild dementia).1 In the context of medical research, it can be "a child's affirmative agreement to participate in research."2 "Assent, rather than informed consent, is relevant to decision making with patients with irreversible impairments of decision-making capacity but who do not altogether lack decision-making capacity." Additionally, "some children are mature enough in their decision-making capacity that decisions should be made with them, even though as a matter of law decisions are made by and for them by their parents".3 For children, "the purpose of an assent process is not to provide a second consent but to allow the child to have an appropriate level of involvement in the decision-making process about something that affects him"4.	http://www.merriam-webster.com/dictionary/assent (accessed 6 Feb 2013) US Federal Regulation, 45 CFR 46.402, Department of Health and Human Services, http://www.hhs.gov/ohrp/sachrp/20061109sachrpappendixa.pdf (accessed 6 Feb 2013) "Informed Consent, Assisted Consent, and Assent in Geriatric Health Care", Laurence B. McCullough, Ph.D., Professor of Medicine and Medical Ethics, Associate Director for Education, Center for Medical Ethics and Health Policy, Baylor College of Medicine, at: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=6&cad=rja&ved=0CFYQFjAF&url=http%3A%2F%2Fwww.bioethics.union.edu%2Fbio%2Fmccullough%2F1.ppt&ei=T3ASUcXqPKvD0AHT6YGoDg&usg=AFQjCNGmVxijttj_KsbDQ3ixt5prKK3iXQ&bvm=bv.41934586,d.dmQ (accessed 6 Feb 2013) "Assent is Not Consent", Journal of Medical Ethics, 2012; 38:3,at: http://jme.bmj.com/content/38/1/3.full (accessed 6 Feb 2013)
Assert DEPRECATED VERB	Instead, use TAG (with an appropriate qualifier). Affirm, Assert, Declare, Indicate, and State are synonyms.	

Assessment	1 (in medicine and nursing) an evaluation or appraisal of a condition. 2 the process of making such an evaluation. 3 (in a problem-oriented medical record) an examiner's evaluation of the disease or condition based on the patient's subjective report of the symptoms and course of the illness or condition and the examiner's objective findings, including data obtained through laboratory tests, physical examination, medical history, and information reported by family members and other health care team members. See also nursing assessment, problem-oriented medical record.	Mosby's Medical Dictionary, 8th edition. © 2009, Elsevier.
Atomic elements	Atomic elements are foundational numerical clinical measures that can be used to calculate more clinically-useful measures, such as using height and weight (the atomic measures) to derive BMI (a higher level discrete element).	
Attest	To UPDATE information by ATTESTing that an EHR record (or part of an EHR record) is genuine. For example, a resident physician may ATTEST that the information contained in an EHR record was created by her. Another example is that an attending physician may annotate a resident's version of the record and then ATTEST to those changes. Note: Attestations may be applied, affixed or bound to an EHR record, for example, via a digital signature, certification, or other verifying mark.	
Attestation	The process of certifying and recording legal responsibility for a particular unit of information.	ISO TS 18308
Audit	To TRACK system-initiated or user-initiated activities by analyzing logs based on policies or rules. For example, the system may automatically AUDIT the daily log for multiple-failed-logon-attempts. Another example is that an administrator may AUDIT the excessive use of extraordinary (i.e., "break-the-glass") access to certain patient information in the Emergency Department.	
Augment DEPRECATED VERB	Instead, use EDIT, ANNOTATE, or LINK with the appropriate qualifiers. Augmentation is the addition of information to existing healthcare data.	
Authenticate	To CONTROL ACCESS to a system by validating the identity of a user, another system or a device before authorizing access. For example, the system may AUTHENTICATE Dr. Jones by validating his identity using a UserID and a biometric device. Another example is that the system rejects Sara Smith's attempt to AUTHENTICATE to the system after three failed password entries.	
Authority	Body that has legal powers and rights.	(ISO/IEC 2382-8, 1998) as cited in ISO TS 18308

Authorization	The process of granting or denying access to a network resource. Most computer security systems are based on a two-step process, sometimes more. The first stage is authentication, which ensures that a user is who he or she claims to be and in some cases, that the user is not already on the system. The second stage is authorization, which allows the user access in varied degrees to various resources based on the pre-assigned privileges associated with the user's identity.	http://www.csgnetwork.com/glossarya.html#authorization
Authorize	To CONTROL ACCESS to a system by applying permissions to use certain functionality or to view certain data. For example, the system may AUTHORIZE Dr. Jones, an Emergency Department physician, to view Emergency Department patient records (note: We assume that the administrator has entered a set of permissions for all Emergency Department physicians). Another example is that the system does not AUTHORIZE deletion by Sara Smith of a patient record that has already been signed.	
Automatically	A qualifier used to indicate that the action will be done by the system, independently of any user intervention. For example, the system shall automatically determine that the user has the privileges to use the requested functionality.	
Auto-populate	To CAPTURE data by inputting it automatically using previously-existing data, providing a default value, or deriving it from other data, or by following various data-entry business rules. For example, the system may AUTO-POPULATE the city, state/province, and country fields when a user enters a zip-code. Another example is that the system may AUTO-POPULATE a newborn's home address with the mother's home address.	
Background process	Background processes, are processes running behind the scene without human interaction or intervention. Sometimes employed to perform certain maintenance activities or to deal with abnormal conditions arising in the lifetime of the instance.	http://www.dbasupport.com/oracle/ora9i/background_process01.shtml
Backup (verb)	To STORE data by placing a copy of the data onto an electronically-accessible device for preservation in case the original is lost, corrupted, or destroyed. For example, a system may BACK UP the incremental changes made to a patient's record by storing it locally on a daily basis. Another example is that an administrator may BACK UP a complete copy of certain data by storing it at an offsite facility.	
Backup (noun)	A copy of data for the specific intent of ensuring its preservation and possible restoration in case the original is lost, corrupted, or destroyed	
Behavioral healthcare	Continuum of services for individuals at risk of, or suffering from mental, addictive, or other behavioral health disorders.	www.mentalhealth.samhsa.gov/publications/allpubs/MC98-70/default.asp
Best practice	Best Practices are practices that incorporate the best objective information currently available regarding effectiveness and acceptability.	www.samhsa.gov/grants/2005/nofa/sm65011_jail_appenAtol.pdf

Bind	To ensure a persistent relationship between two (or more) pieces of information. For example, one may bind an author's (digital) signature to the corresponding health record content created by that author. Another example is that one may bind certain metadata to an electronic document. Another example is that one may bind a certain laboratory result (report) to a corresponding laboratory order.	
Boundaries	Something that indicates a border or limit. The border or limit so indicated.	http://dictionary.reference.com/search?q=boundaries&r=66
Business Rule	From the information system perspective, "a business rule is a statement that defines or constrains some aspect of the business. It is intended to assert business structure, or to control or influence the behavior of the business."1 In the healthcare world, there are a variety of areas in which business rules may be developed and applied. Examples include (but are not limited to) coding, billing, claim filing and reimbursement, resource management (personnel, beds, supplies, equipment), workflow optimization, and clinical decision support. The last is a specialized area particular to clinicians that can require a very robust set of complex algorithms that incorporate specific rules.	1. The Business Rules Group, at http://www.businessrulesgroup.org/defnbrg.shtml, accessed 5 June 2013.
Calculate DEPRECATED VERB	Instead, use "DETERMINE and STORE" or "DETERMINE and PRESENT", as appropriate in the context.	
Capture	To MANAGE data by auto-populating, entering, importing, or receiving the data, either through human intervention or automated means. For example, a system may CAPTURE patient's data entered by a physician through the keyboard or sent by the physician using a mobile device. Another example is that the system may CAPTURE laboratory results by automatically receiving laboratory data or by keyboard entry for locally performed tests.	
Care Guidelines (synonymous with Health Care Guidelines)	Recommendations that are offered by a care giver to a patient or are recommendations that are recognized by care providers as being appropriate. In general, care guidelines are based on expert knowledge of assessing, treating and/or managing a particular medical condition. Care guidelines for providers include the important subset of Clinical Practice Guidelines. According to the US Agency for Healthcare Research and Quality (AHRQ), clinical practice guidelines can be categorized into a number of areas: Assessment of Therapeutic Effectiveness, Counseling, Diagnosis, Evaluation, Management, Prevention, Rehabilitation, Risk Assessment, Screening, Technology Assessment, and Treatment.	http://guideline.gov/about/glossary.aspx
Care Plan	A care plan is an ordered assembly of expected or planned activities, including observations, goals, services, appointments and procedures, usually organized in phases or sessions, which have the objective of organizing and managing health care activity for the patient, often focused upon one or more of the patient's health care problems. Care plans may include order sets as actionable elements, usually supporting a single session or phase. Also known as Treatment Plan.	HL7 Clinical Decision Support team, Jim McClay, SAGE guideline consortium, University of Nebraska Medical Center

Care Plan (alt)	A personalized statement of planned health care activities relating to one or more specified health issues.	ISO 18308, [EN 13940-1:2007, modified]
Care Process	A task (or set of tasks) that is/are clinically-oriented. Care processes are comprised of care planning, care delivery, and follow up tasks.	
Care Team	A group or collection of individuals who provide health care to an individual for a given health care episode, health care setting, or health condition.	
Cascade (noun)	Something arranged or occurring in a series or in a succession of stages so that each stage derives from or acts upon the product of the preceding.	http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=cascade
Chain-of-Trust Agreement	A requirement certain administrative procedures may be implemented that guard the integrity, confidentiality and availability of sensitive data. A Chain-of-Trust Agreement is such a procedure. It is essentially a Non-Disclosure Agreement that governs the transmission of data through an electronic medium. The sender and recipient agree to protect the data electronically transmitted between them.	http://www.hipaadvisory.com/action/legalqa/advisor/HIPAAdvisor5.htm
Change history	A record of changes that have occurred over time, as to a document or other change controlled item. The log can serve as an audit record for activity in a file system.	http://en.wikipedia.org/wiki/File_change_log
Change log	A record of changes that have occurred over time, as to a document or other change controlled item. The log can serve as an audit record for activity in a file system.	http://en.wikipedia.org/wiki/File_change_log
Chronicity	Those attributes or dimensions that could be associated with a chronic condition. Chronicity-related attributes may include: time period (e.g., childhood, pubescence, constant), duration of condition (e.g., brief, extended, sustained, habitual), duration of episode (e.g., sleeping hours, self-limiting, consistent), level (e.g., mild, moderate, or severe condition or pain), and/or periodicity or frequency (e.g., a seasonal allergy).	
Clinical Data / Information	Data/information related to the health and health care of an individual collected from or about an individual receiving health care services. It includes a caregiver's objective measurement or subjective evaluation of a patient's physical or mental state of health; descriptions of an individual's health history and family health history; diagnostic studies; decision rationale; descriptions of procedures performed; findings; therapeutic interventions; medications prescribed; description of responses to treatment; prognostic statements; and descriptions of socio-economic and environmental factors related to the patient's health.	CPRI, 1996b; ASTM 1769

Clinical decision support	Clinical Decision Support (CDS) refers broadly to providing clinicians or patients with clinical knowledge and patient-related information, intelligently filtered or presented at appropriate times, to enhance patient care. Clinical knowledge of interest could range from simple facts and relationships to best practices for managing patients with specific disease states, new medical knowledge from clinical research and other types of information.	http://www.himss.org/ASP/topics_clinicalDecision.asp
Clinical documentation	Documentation of clinical observations, services, or communications. Clinical documentation can be captured as structured or unstructured data. Clinical documentation also includes documentation that is preliminary, final, attested, or not-yet-attested.	
Clinical documents	Documents created surrounding the process of providing health care and used in support of clinical decisions. See Also: Clinical Information.	
Clinical image	A clinical image is a non-textual, pictorial depiction of clinical information (for example: a radiograph, picture, video, or waveform). There are different types of clinical images, to include a picture (e.g. dermatology photo) or radiograph (X-Ray image), video clip (e.g. colonoscopy), audio clip (e.g. heart sounds), waveform (e.g. EKG, fetal monitor), and scanned image (.pdf file). The inherent difference between a clinical image and other types of data is that images generally require a higher degree of complexity (e.g. software code) in order to properly interpret and be "computable", if at all. (Note: most dictionaries, including medical and IT dictionaries, only think of a picture as being an image. However, for the purposes of the HL7 EHR FM, all of these categories of "multi-media digital objects" are included in this definition).	
Clinical information	Information about a patient, relevant to the health or treatment of that patient, which is recorded by or on behalf of a healthcare professional. NOTE: Clinical information about a patient may include information about the patient's environment or about related people or animals where this is relevant.	

Clinical Practice Guideline (CPG)	A statement that includes recommendations intended to optimize patient care. It is informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options.	"Clinical Practice Guidelines We Can Trust", Committee on Standards for Developing Trustworthy Clinical Practice Guidelines Board on Health Care Services, Institute of Medicine (IOM) of the US National Academies of Science, May 17, 2011, at: http://www.iom.edu/~/media/Files/Activity%20Files/Quality/SystemReviewCER/Workshop%20Presentations/Shelly%20Greenfield.pptx, (accessed 21 Feb 2013)
Clinical process	The set of interrelated or interacting health care activities performed by one or more health care professionals	ISO 18308
Clinician	Health professional who delivers health services directly to a patient/client	ISO/TR 12773-1
Clinical tasks	Tasks whose results are recorded in clinical documents.	
Code set(s)	Under HIPAA, this is any set of codes used to encode data elements, such as tables of terms, medical concepts, medical diagnostic codes, or medical procedure codes. This includes both the codes and their descriptions. HIPAA requires every provider who does business electronically to use the same health care transactions, code sets, and identifiers. Code sets are the codes used to identify specific diagnosis and clinical procedures on claims and encounter forms.	http://aspe.hhs.gov/admnsimp/faqcode.htm www.cms.hhs.gov/TransactionCodeSetsStands/
Coding system	Combination of a set of code meanings and a set of code values, based on a coding scheme. NOTE Code meanings are typically represented by terms or rubrics, but they can have other representations. Code values are typically numeric or alphanumeric	ISO 18308, [EN 1068:2005]
Coding Scheme	A collection of rules that maps the elements of one set on to the elements of a second set NOTE: The two sets considered here are (1) a set of 'code meanings' (or 'coded set'), and (2) a set of 'code values' (or 'code set'). Those sets are not, per se, part of the coding scheme.	ISO 18308, [ISO/IEC 2382-4:1999] [EN 1068:2005]
Coded	References a vocabulary, code set, or database, such as SNOMED, MEDCIN, etc.	

Cohort	A group of individuals who share a characteristic at some specific time and who are then followed prospectively, with data being collected at one or more suitable intervals. The most common use of the term is to describe a birth cohort, in which all the group members are born in a specified time period, but other common characteristics could define the cohort, such as marriage date, exposure to an infectious agent, or date of diagnosis or of treatment for a disease.	Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition. © 2003, an imprint of Elsevier, Inc.
Common Content (within context of Orders):	Identical information for separate orders (e.g. medication [e.g. dose, frequency, patient instructions, patient identifier, ordering provider], laboratory, non-medication) for the same patient, class of order or ordering event.	
Communication with medical devices	Interfacing and integration ranging from the device to the database level in support of creation of clinical documents. Examples include automatic importation of blood pressure readings and viewing of ECGs.	
Compendium	In the context of Pharmacy, a compendium is a collected body of information detailing the standards of strength, purity, and quality of drugs.	http://medical-dictionary.thefreedictionary.com/compendium
Compute DEPRECATED VERB	Instead, use “DETERMINE and STORE” or “DETERMINE and PRESENT” as appropriate in the context.	
Concept	A unit of knowledge created by a unique combination of characteristics	ISO 18308, [ISO 1087-1:2000]
Confirmation service (BAA)	A service that provides identification, control, accounting, and documentation of all changes that take place to system hardware, software, firmware, supporting documentation, and test results throughout the life span of the system.	All In One CISSP Certification Exam Guide, Shon Harris, CISSP, MCSE, CCNA, 2002, McGraw Hill, Osborne, Berkley, CA.
Confidentiality	(The/A) property that information is not made available or disclosed to unauthorized individuals, entities or processes	[ISO TS / EN 13606-4: 2007, modified]
Configure	Instead, use “MANAGE configuration parameters for …”. For example, the user may desire to STORE configuration parameters regarding the preferred type of human language. Another example is that an administrator may UPDATE configuration parameters that control external access to the system by restricting access during the weekends.	

Conform	To comply. Note: The verb 'Conform' is used with a special meaning in the FM and is not part of the Action-Verb model. It is a special instruction for including the functional requirements of one function in another function. For example: "The system SHALL conform to function IN.1.1 (Entity Authentication)".	
Conformance	The fulfillment of specified requirements by a product, process, or service.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Conformance criteria	Statements of requirement indicating the behavior, action, capability that constitutes implementation of the function.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Conformance clause	A section of a specification that defines the requirements, criteria, or conditions to be satisfied in order to claim conformance.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Conformance statement	A statement associated with a specific implementation of a profile of the EHR-S Functional Model.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Consent (noun)	An agreement, approval, or permission as to some act or purpose given voluntarily by a competent person.	ISO 18308, [Black's Law Dictionary, 2008]
Consent (Informed)	"Consent by a patient to a surgical or medical procedure or participation in a clinical study after achieving an understanding of the relevant medical facts and the risks involved." The key distinction between Informed Consent and Assent is that in Informed Consent, the individual providing said consent is considered to be fully capable of making a decision relevant to the course of action being presented to him or her, while in Assent the individual may not be fully capable of making the decision. See Assent.	http://medical-dictionary.thefreedictionary.com/informed+consent (accessed 6 Feb 2013)
Consumer (in relation to healthcare services)	An individual who may become a subject of care.	ISO/TR 12773-1

Control Access	To AUTHENTICATE users and/or systems and AUTHORIZE access to functionality and/or data. For example, the system may CONTROL ACCESS to the patient's data by authenticating Dr. Jones' identity and authorizing him to update his patient's records. Another example is the system may CONTROL ACCESS to the system by refusing a hospital visitor the ability to authenticate to the system. NOTE: the set of CONTROL ACCESS Action-Verbs requires data specifying permissions. This permission data is managed via the MANAGE data Action-Verbs set.	
Correct DEPRECATED VERB	Instead, use EDIT.	
Create DEPRECATED VERB	Instead, use "DETERMINE and STORE" or "DETERMINE and RENDER" or "DETERMINE and PRESENT" as appropriate to the context.	
Critical value (also Panic value)	A result (e.g. laboratory, radiology, pathology) on a patient that must be reported immediately to care provider, which may require urgent therapeutic action1. Use of critical or panic values is part of the concept of "decision levels" in laboratory medicine; when a particular value for reporting lab test results exceed a DL are exceeded, a response by a managing clinician is required2.	http://medical-dictionary.thefreedictionary.com/critical+value http://medicaldictionary.thefreedictionary.com/decision+levels
Current medication	A medication that a patient is using, either on a regular basis or on an ad hoc basis (e.g., "two pills as needed for pain"). A medication that has been dispensed to a patient and whose administration has not yet been completed or finished according to the medication's intended duration, dose, frequency, and quantity.	
Dashboard	A dashboard is a data representation tool which polls information from a system(s) and presents it to the user to allow them to make decisions and take actions, and which reflects the impact of these actions in a timely fashion so as to facilitate the user in dynamically continuing to alter their behaviors.	
Data aggregation	A process by which information is collected, manipulated and expressed in summary form. Data aggregation is primarily performed for reporting purposes, policy development, health service management, research, statistical analysis, and population health studies.	ISO TS 18308

Data Enterer	A person who transferred the content, written or dictated by someone else, into a clinical document. The guiding rule of thumb is that an author provides the content found within the header or body of the document, subject to their own interpretation, and the Data Enterer adds that information to the electronic system. In other words, a Data Enterer transfers information from one source to another (e.g. transcription from paper form to electronic system).	CDAR2_IG_IHE_CONSOL_DSTU_R1.1_2012JUL, HL7 Implementation Guide for CDA® Release 2: IHE Health Story Consolidation, DSTU Release 1.1 (US Realm) July 2012
Data validation	A process used to determine if data are accurate, complete, or meet specified criteria. NOTE – Data validation may include format checks, completeness checks, check key tests, reasonableness checks, and limit checks.	(ISO/IEC 2382-8, 1998) as cited in ISO TS 18308
Decide	To DETERMINE actions in the processing of data by choosing a certain alternative based on an analysis, and acting accordingly. For example, the system may DECIDE to render a notification to off-duty nurses to report for duty based on clinic rules and the receipt of a tornado alert. Another example is that the system may DECIDE to RENDER an alert to a clinician that a prescribed drug is contraindicated with the patient's listed allergies, based on the analysis conducted.	
Decision support prompts	Any computer based support of medical, managerial, administrative and financial decisions in health using knowledge bases and/or reference material. [In this sense the term is essentially synonymous with Knowledge-Based Systems, and some users use the term this way in preference to the terms Expert System or Knowledge-Based System, e.g., a system that uses statistical look-up to provide users with decision support may be regarded as a Decision Support System, therefore care should be taken in making this identification between the terms].	http://www.centc251.org/Ginfo/Glossary/tcglosd.htm
Decision support system	Any computer based support of medical, managerial, administrative, and financial decisions in health using some processing logic with knowledge bases and/or reference materials.	
Declare DEPRECATED VERB	Instead, use TAG (with an appropriate qualifier). Affirm, Assert, Declare, Indicate, and State are synonyms.	
Decrypt	To STORE data by converting encrypted data back into its original form, so it can be understood. For example, the system may DECRYPT clinical data received from an authenticated external laboratory system.	

Decryption	Decryption is the process of converting encrypted data back into its original form, so it can be understood.	http://searchsecurity.techtarget.com/sDefinition/0,,sid14_gci212062,00.html
De-identification	The process of removing the association between a set of identifying data and the data subject.	ISO 18308, [ISO/TS 25237:2008]
De-identify	To MANAGE-DATA-VISIBILITY by removing identifiers from data in such a way that the risk of identifying an individual is very small under the circumstances, as specified by scope of practice, organizational policy, and/or jurisdictional law. For example, a system may DE-IDENTIFY data for a researcher who wants to perform an analysis of drug effectiveness on diabetic patients. Another example is where a hospital may DE-IDENTIFY data for a set of patients to transmit to a university professor looking for illustrative cases for educational work.	
Delete	To REMOVE data by making it inaccessible to the application. For example, a user may DELETE an existing patient-appointment at the request of the patient. Note: In the case where the data becomes invalid but needs to remain in the system, the word “TAG” is preferred over the word “DELETE” or the word “Nullify”. This type of action is considered a data “Tagging” process and not a data deletion process. For example, a health information management professional may desire to TAG a certain clinical term as obsolete, but the term needs to remain in the system for backward compatibility purposes.	
Deprecate	Instead, use TAG with an appropriate qualifier. Deprecation of certain information may be required when that data becomes invalid, but needs to remain in the system. For example, a health information management professional may desire to TAG a certain clinical term as deprecated, but the term is retained in the system for backward compatibility purposes.	
Deprecated-Verb	IIn this Glossary, the term “deprecated” is used to qualify Action-Verbs that were previously used in conformance criteria and are not part of the current set of hierarchy of Action-Verbs; therefore, deprecated Action-Verbs should not be used. These deprecated Action-Verbs have been labeled as such. Examples of deprecated Action-Verbs include ALERT, QUERY, and SEARCH.	
Derived profile	A profile that is created from an existing profile.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Determine	To MANAGE data by analyzing it and making a decision based on the analysis. For example, the system may DETERMINE the possible severity of a patient’s allergic reaction to a proposed drug by analyzing the patient’s profile against a drug database and deciding whether the clinician should be presented with an alert or not. Another example is that a system may DETERMINE the next steps in a workflow based on an analysis of a patient’s lab results, the patient’s profile, and the clinical rules of the clinic, this analysis leading to a decision as to the appropriate next steps in the clinical process.	

Digital signature	Digital signature (or public-key digital signature) is a type of method for authenticating digital information analogous to ordinary physical signatures on paper, but implemented using techniques from the field of public-key cryptography. A digital signature method generally defines two complementary algorithms, one for signing and the other for verification, and the output of the signing process is also called a digital signature.	http://en.wikipedia.org/wiki/Digital_signature
Digital signature (alt)	Any representation of a signature in digital form, including an image of a handwritten signature. The Authentication of a computer entry in a health record made by the individual making the entry.	AHIMA, Health Information Management and Technology: Pocket Glossary. Page 74. 2006
Directive	Instruction how to proceed or act.	ISO 18308, [Oxford English Dictionary, 2008]
Directory	In computing, a directory, catalog, or folder, is an entity in a file system which contains a group of files and other directories. A typical file system contains thousands of files, and directories help organize them by keeping related files together.	http://en.wikipedia.org/wiki/Directory
Disable-Access DEPRECATED VERB	Instead, use "CONTROL ACCESS by removing permissions to use specific functionality and/or manage specific data".	
Disclose DEPRECATED VERB	Instead, use "RENDER and TAG" with a label that identifies the data's purpose as "for disclosure use only".	
Disease management	A broad approach to appropriate coordination of the entire disease treatment process that often involves shifting away from more expensive inpatient and acute care to areas such as preventive medicine, patient counseling and education, and outpatient care. This concept includes implications of appropriate versus inappropriate therapy on the overall cost and clinical outcome of a particular disease.	http://cancerweb.ncl.ac.uk/cgi-bin/omd?disease+management
Discrete capture	Capture of an individual item of data.	http://www.m-w.com/dictionary/capture
Discrete data	Data that are often grouped by similar types of values and segregated into individual fields. (Contrast with free text data.) Note: A discrete data field may contain free text data.	

Dispense (a medication)	The process of dispensing a medication begins after the prescription/medication order is filled and the medication becomes available for use. Dispensing includes transporting the medication and documenting that fact that the medication was transported. Note: Dispensing a medication requires that the prescription or medication order must first be filled. Note: in the EHR-S FM, the term "fill" will represent the combined notions of medication filling and dispensing.	
Display (verb) DEPRECATED VERB	Instead, use PRESENT.	
Document (noun)	(noun form): See "Clinical Document." (noun form) – a writing conveying information.	http://www.m-w.com/dictionary/document
Document (verb) DEPRECATED VERB	Instead, use ENTER, or "TAG with" appropriate references, or "LINK to" sources.	
Documentation	All "notes" are "documentation," but not all "documentation" are "notes". Therefore, the broader term "documentation" should be used, unless the use of "notes" as a subset is specifically intended. See "Notes."	
Edit (verb)	To UPDATE data by correcting, amending, appending, or augmenting the data. For example, the physician may EDIT the patient's home address by correcting the civic number from 368 to 638 Oak Street. Another example is that a physician may EDIT existing notes about an injury by appending an x-ray picture of a broken bone.	
e.g.	exempli gratia (Lat.) For example; including but not limited to just the ones listed.	
EHR	An Electronic Health Record (EHR) is a comprehensive, structured set of clinical, demographic, environmental, social, and financial data and information in electronic form, documenting the health care given to a single individual.	(ASTM E1769, 1995)
Electronic Health Record	Information relevant to the wellness, health and health care of an individual, in computer-processable form and represented according to a standardized information model.	ISO 18308
Electronic Health Record Architecture	A formal description of a system of components and services for recording, retrieving and handling information in electronic health records.	ISO 18308

Electronic Health Record System	A system for recording, retrieving and handling information in electronic health records.	ISO 18308, [ISO/EN 13606-1:2008]
Electronic messaging systems	Messages with a definite originator and one or more recipients, viewable on a computer or other electronic device. Common examples include cellular phone text messages and electronic mail.	
Electronic Consult (e-Consult, Teleconsultation	The business practice of a provider (often Primary Care) requesting advice, interpretation and/or recommendation for disposition (treatment, prescriptions, etc.) from another provider (the consultant), often specialist, via electronic means and not requiring a face to face interaction between the patient and the specialist. It includes patient demographic and medical information relevant for clinical providers to obtain or provide expert opinion and/or advice regarding a patient, and ideally is captured in the patient's electronic health record. The consulting (specialist) provider evaluates and/or interprets and can render diagnostic and treatment recommendations. The requesting provider orders and documents prescriptions, laboratory requests and/or other services as a result. Responsibility for care still medico-legally rests with the requesting provider, so feedback to that provider is a necessary part of the teleconsultative process. Thus, the requesting provider will also derive professional growth. An example is a Family Practice physician sending an e-Consult to a Dermatologist for assistance in evaluating and recommending treatment for an intractable skin condition. NOTE: This differs from Electronic Referral in that in an Electronic Consult the requesting provider maintains responsibility for the patient	
Electronic Referral (e-Referral, Telereferral)	The business practice of a provider requesting advice, interpretation and/or recommendation for disposition (treatment, prescriptions, etc.) from another provider (the "referred-to" provider), usually a specialist, via electronic means and not requiring a face to face interaction between the patient and the specialist. It includes patient demographic and medical information relevant for clinical providers to obtain or provide expert opinion and/or advice regarding a patient, and ideally is captured in the patient's electronic health record. The referred-to (specialist) provider evaluates and/or interprets and can render diagnostic and treatment recommendations and can also order and document prescriptions, laboratory requests and/or other services as a result. Responsibility for care transfers to the referred-to provider. An example is a Family Practice physician "e-referring" a patient to a nephrologist to manage the renal (kidney organ system) care of a patient. NOTE: This differs from Electronic Consult in that in an Electronic Referral the requesting provider relinquishes management and responsibility for the patient's particular condition to the referred-to provider (but may maintain responsibility for all other aspects of the patient's management)	

Electronic Signature (e-Signature)	An electronic sound, symbol, or process, attached to or associated with a contract or other record and used as the legal equivalent of a written signature. An electronic sound, symbol, or process, attached to or logically associated with a contract or other record and executed or adopted by a person with the intent to sign the record A signature that consists of one or more letters, characters, numbers or other symbols in digital form incorporated in, attached to, or associated with an electronic document.	The American Heritage® Dictionary of the English Language, Fourth Edition copyright ©2000 by Houghton Mifflin Company. Updated in 2009. Published by Houghton Mifflin Company. US "Electronic Signatures In Global and National Commerce Act of 2000", Public Law 106-229, 15 USC 7006, Sec. 106, page 10 at: http://www.gpo.gov/fdsys/pkg/PLAW-106publ229/pdf/PLAW-106publ229.pdf (accessed 21 Feb 2013) Canadian "Personal Information Protection and Electronic Documents Act - S.C. 2000, c. 5 (Section 31) ", at: http://laws-lois.justice.gc.ca/eng/acts/P-8.6/page-14.html#docCont (accessed 21 Feb 2013). See also: "European Legislation on eSignature", at: http://ec.europa.eu/information_society/policy/esignature/eu_legislation/index_en.htm "The European Electronic Signature Directive, at http://ec.europa.eu/information_society/eeurope/2005/all_about/security/electronic_sig_report.pdf, pages 27-30

Eliminate DEPRECATED VERB	Instead, use DELETE or PURGE as applicable.	
Encounter (noun)	Encounter serves as a focal point linking clinical, administrative, and financial information. Encounters occur in many different settings – ambulatory care, inpatient care, emergency care, home health care, field and virtual (telemedicine).	http://www.ncvhs.hhs.gov/040127p1.htm
Encrypt	To STORE data by transforming the data into a form that is difficult to understand by unauthorized people or systems. For example, the system may ENCRYPT sensitive information such as the patient's financial information.	
Encryption	Encryption is the conversion of data into a form, called a ciphertext, that cannot be easily understood by unauthorized people.	http://searchsecurity.techtarget.com/sDefinition/0,,sid14_gci212062,00.html
Enter	To CAPTURE data by inputting it manually (for example, via a keyboard) or through other input devices. For example, the user may manually ENTER the patient's street address via the keyboard. Another example is that the user may ENTER the patient's body weight via an electronic weight scale.	
Enterprise	A generic term describing an extremely large network. It is usually used as a definition of 500 stations or greater.	http://www.csgnetwork.com/glossarye.html#enterprise
Entity	Something that has separate and distinct existence and objective or conceptual reality. Something that exists as a particular and discrete unit. An organization (as a business or governmental unit) that has an identity separate from those of its members.	http://www.m-w.com/cgi-bin/dictionary?book=Dictionary&va=entity
Entity (alt)	A concrete or abstract thing of interest, including associations among things.	ISO 18308, [ISO/IEC 2382]
Entry	Documentation of a discrete item of health information NOTE: an entry may for example represent the documentation of a clinical observation, an inference, an intention, a plan or an action.	ISO 18308

Event	An event is anything that takes place or happens to the patient or is related to the patient, especially something important such as an incident (e.g. adverse event), procedure or diagnosis. From the HL7 RIM: A stimulus that causes a noteworthy change in the state of an object, or a signal that invokes the behavior of an object.	
Evidence based resources	Evidence-based practice is a "conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research".	http://www.fhs.mcmaster.ca/rehab/research/ebr.html
Exchange		
Explicit consent	Permission that is freely and directly given, expressed either viva voce or in writing.	ISO 18308
Export DEPRECATED VERB	Use RENDER instead.	
Externally-sourced	Refers to an object captured from outside the user's EHR system. Examples of externally-sourced object include: faxes, referral authorizations, consultant reports, lab results and encounter notes from another healthcare organization, and patient/resident correspondence of a clinical nature.	
Extract	To RENDER data by locating, retrieving and possibly assembling data based on certain criteria and for certain purposes. For example, a system may EXTRACT for a clinician all the x-ray reports regarding the patient's chest. Another example is that the system may automatically EXTRACT allergy history when the physician enters a prescription. Another example is that a system may EXTRACT for a researcher the number of pneumonia-like cases treated at the Emergency Department within a specific time period. Another example is that a system may EXTRACT and aggregate information using a cohort of patients who have pneumococcal disease and categorize that cohort by specific age-ranges.	
Family History	A record of health information about a person and his or her close relatives. A complete record includes information from three generations of relatives, including children, brothers and sisters, parents, aunts and uncles, nieces and nephews, grandparents, and cousins. Families have many factors in common, including their genes, environment, and lifestyle. Together, these factors can give clues to medical conditions that may run in a family. By noticing patterns of disorders among relatives, healthcare professionals can determine whether an individual, other family members, or future generations may be at an increased risk of developing a particular condition. An essential part of a patient's medical history in which he or she is asked about the health of members of the immediate family in a series of specific questions to discover any disorders to which the patient may be particularly vulnerable, such as "Has anyone in your family had tuberculosis? diabetes mellitus? breast cancer?" Hereditary and familial diseases are especially noted. The age and health of each	http://ghr.nlm.nih.gov/handbook/inheritance/familyhistory

	person, age at death, and causes of death are charted. Often a genogram is developed for pictorial documentation. The family health history is obtained from the patient or family in the initial interview and becomes a part of the permanent record. Other questions, such as those concerning the age, sex, relationships of others in the household, and marital history of the patient, may also be asked if the information has not already been secured.	
Fast Track	An accelerated patient-registration workflow technique. Very useful for rendering care in an emergency situation and quickly discharging acute care patients.	
Fetal Death	Death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy and which is not an induced termination of pregnancy. The death is indicated by the fact that after such expulsion or extraction, the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps	
Fill (a prescription or a medication order)	The process of filling a prescription or medication order begins after the order is validated. The process includes checking the perpetual inventory supply of medicinal ingredients, then preparing, collating, and reviewing the final medication product. The process ends when a decision is made as to whether the medication should (or should not) be dispensed. Note: A medication order that has been filled may or may not be dispensed (e.g., a patient may refuse to acquire a medication). Note: in the EHR-S FM, the term "fill" will represent the combined notions of medication filling and dispensing.	
Filterable	The ability to programmatically separate and constrain data into specific value sets.	
Flag DEPRECATED VERB	Instead, use "RENDER an alert", or "PRESENT an alert", or "TRANSMIT a notice", if the intent is to signal a situation (i.e. flag a situation).	
Flow sheets	A tabular summary of information that is arranged to display the values of variables as they change over time.	http://www.centc251.org/Ginfo/Glossary/tcglosf.htm
Formulary	A preferred list of drug products that typically limits the number of drugs available within a therapeutic class for purposes of drug purchasing, dispensing and/or reimbursement. A government body, third-party insurer or health plan, or an institution may compile a formulary. Some institutions or health plans develop closed (i.e. restricted) formularies where only those drug products listed can be dispensed in that institution or reimbursed by the health plan.	http://www.hrsa.gov/opa/glossary.htm

Function	A computation which takes some arguments or inputs and yields an output. Any particular input yields the same output every time. More formally, a mapping from each element in the domain to an element in the range. A subroutine which returns a value.	
Generate DEPRECATED VERB	Instead, use “DETERMINE and STORE” or “DETERMINE and PRESENT” or “DETERMINE and RENDER“ as appropriate to the context.	
Generic orders	General treatment orders.	
Genotype	1. The genetic makeup, as distinguished from the physical appearance, of an organism or a group of organisms. 2. The combination of alleles located on homologous chromosomes that determines a specific characteristic or trait.	The American Heritage® Science Dictionary Copyright © 2005 by Houghton Mifflin Company. Published by Houghton Mifflin Company.
Genetic Disorder (also Genetic Illness, Inherited Disorder)	A disease or condition caused by an absent or defective gene or by a chromosomal aberration, as in Down Syndrome.	The American Heritage® Science Dictionary Copyright © 2005 by Houghton Mifflin Company. Published by Houghton Mifflin Company.
Grant-Access DEPRECATED VERB	Instead, use CONTROL ACCESS.	
Guidelines	An indication or outline of policy or conduct.	http://www.merriamwebster.com/dictionary/guideline
Harmonize	To UPDATE data by aligning and reconciling it with other information in the system, or with the data of another system (or systems). For example, the system may HARMONIZE a patient’s new home address with the data of systems of other members of the care-team.	
Health care	Activities, services, or supplies related to the health of an individual.	ISO 18308, [EN 13940-1:2007]
Health care activity	Undertakings (assessments, interventions) that comprise a healthcare service.	ISO/TR 12773-1

Health care service	service provided with the intention of directly or indirectly improving the health of the person or populations to whom it is provided.	ISO/TR 12773-1
Health information	Information about a person relevant to his or her health.	ISO 18308
Health issue	Issue related to the health of a subject of care, as identified or stated by a specific health care party.	ISO 18308
Health care party	Organization or person involved in the process of health care.	ISO 18308, [EN 13940-1:2007]
Health Care Professional	See Health Professional.	
Health Care Provider	See Provider.	
Health Condition	aspect of a person or group's health that requires some form of intervention NOTE These interventions could be anticipatory or prospective, such as enhancing wellness, wellness promotion or illness prevention (e.g., immunization). b) symptoms, health problems (not yet diagnosed), diagnoses (known or provisional), e.g., diabetes, or physiological changes that affect the body as a whole or one or more of its parts, e.g., benign positional vertigo, and/or affect the person's well-being, e.g., psychosis, and/or affect the person's usual physiological state, e.g., pregnancy, lactation.	ISO/TR 12773-1
Health Information	For the purposes of this standard, Health Information is information regarding the health of an individual (or group of individuals), or is information regarding the health care provided to an individual individual (or group of individuals). Heath information includes, but is not limited to: an Electronic Health Record (EHR), statement, entry, document, report, note, chart, extract, or metadata. Second-tier health information includes, but is not limited to: administrative, financial, workflow, clinical, and quality measurement information.	
Health mandate	Statement authorized by the subject of care, an authorized representative of the subject of care, or by the authority of law, defining the scope and limits of the specific role assigned to one health care party, and delineating its responsibilities towards that subject of care with regard to this role.	ISO 18308, [EN 13940-1:2007]
Health Professional	Person who is authorized by a recognized body to directly provide certain healthcare services.	ISO/TR 12773-1

Health-Related-factors	Circumstances, influences, causes or issues that affect or describe a patient's ability to receive or respond to treatment, or maintain wellness (including physical, mental, social, spiritual, community, and/or economic dimensions). A patient's strengths (positive factors) or weaknesses (negative factors) may impact a patient's care or recovery and may be recorded as part of the EHR to support the development of care plans and treatment options (e.g. coverage by insurance (typically a positive factor) versus unemployment (typically a negative factor). Examples of factors include: family support, financial support, health insurance levels, good overall health, employment status/type, access to care, and education level. Heath-related factors may be included in a patient's problem list (e.g. ambulatory status, or addictions). An example of an active patient-specific strength is that of an adult child providing care for an elderly parent during his/her seasonal break from college.	
Hide	To MANAGE-DATA-VISIBILITY by making specific information invisible so that the existence of the information is not expressed except to authorized users; viewers of the patient record receive no indication that the hidden information exists or does not exist. For example, the system may HIDE the existence of a patient's psychiatric record from all viewers except for the patient's psychiatrist. Note: the verb "unhide" is an acceptable verb to reverse the action of hiding.	
Identifier	A piece of information used to claim an identity, before a potential corroboration by a corresponding authenticator	ISO 18308, [ENV 13608-1]
Identify DEPRECATED VERB	Instead, use other Action-Verbs adapted to the context. For example, instead of '…to uniquely identify a patient…', one should say '…to MAINTAIN a unique identifier for a patient…' Another example is: instead of '…to help identify the patient….', use '…help DETERMINE the identity of the patient.'.	
i.e.	id est (Lat.) ; in other words; that is.	

Immunization History	A complete, incomplete, or partially-complete list of immunizations for a given patient. Note: When a given immunization history is conveyed, it is also very important that the immunization history's frame of reference is conveyed. Temporal and organizational scope attributes are required to accurately specify the extent of the history. If that scope is specified, it becomes relatively simple to understand and merge/reconcile immunization data; if that scope is not specified, the meaning of the "history" cannot be determined. For example, receiving a set of immunization records accompanied by a facility identifier and date range would specifically indicate that only records from that facility/entity and for that date range are provided. If the patient had only received immunizations from that facility, or the facility holding the immunization records confirms that they have the complete immunization history on the patient, then the attributes could be elevated to 'all' facilities and 'lifetime' date range. We need to distinguish a 'history of immunizations' from an 'immunization history'. The former connotes/implies a chronological rendering of *known* immunizations and therefore is by-definition, known and complete. The latter implies a complete rendition of the set of all possible immunizations	
Implied Consent	Consent inferred from signs, actions, or facts, or by inaction or silence.	ISO 18308
Import	To CAPTURE data into a local system by proactively accessing data from an external source and then downloading and integrating the data into the local system. For example, the system may IMPORT the latest drug trial data every Friday evening. Another example is that the user may IMPORT various sets of best practices related to juvenile diabetes.	
Including	Indicates a minimum set of values. The system may support additional values, but must support those listed as "included".	
Indicate DEPRECATED VERB	Instead, use TAG with an appropriate qualifier. Affirm, Assert, Declare, Indicate, and State are synonyms.	
Informative functional profile	A functional profile that has successfully completed formal public scrutiny via the HL7 consensus process.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Information Semantics	Information Semantics are defined by an information model and a terminology model. The terminology model may be constrained by standard value sets and/or code sets. For example, terms for vaccinations may be constrained by the federal government. Another example is that a list of drugs may be constrained by a particular formulary.	

Input DEPRECATED VERB	Instead, use CAPTURE, ENTER, RECEIVE, IMPORT or AUTO-POPULATE, depending on the context and scope of actions described.	
Integrate	To UPDATE data by merging other data with the existing data in a controlled manner. For example, a user may INTEGRATE summaries of health care services that were provided in another jurisdiction into the patient's local record. Another example is that an EHR system may INTEGRATE a single-sign-on application with the EHR system's existing user-authentication services. Another example is that an EHR system may INTEGRATE multiple third-party modules to enhance its capabilities.	
Integrity	Assurance that the data being accessed or read has neither been tampered with, nor been altered or damaged through a system error, since the time of the last authorized access. The state of an artifact that has not been deliberately or accidentally altered.	ISO 18308
Interchange standards	Standards by which information, typically electronic data, are exchanged. Examples include the HL7 Clinical Document Architecture.	
Internet Engineering Task Force (IETF) RFC 3881	"The Internet Engineering Task Force is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. . It develops s Internet standards expressed in Request for Comment (RFCs). RFC 3881 defines "the format of data to be collected and minimum set of attributes that need to be captured for security auditing in healthcare application systems. The format is defined as an XML schema, which is intended as a reference for healthcare standards developers and application designers. It consolidates several previous documents on security auditing of healthcare data."	http://www.ietf.org/about/ http://tools.ietf.org/html/rfc3881
Interoperate	To coordinate information, services, and/or functionality among systems.	
Interpretation	To conceive in the light of individual belief, judgment, or circumstance.	http://www.merriamwebster.com/dictionary/interpreting
Intervention	The act or fact of interfering so as to modify. Specifically, any measure whose purpose is to improve health or to alter the course of a disease.	http://www.mercksource.com/pp/us/cns/cns_hl_dorlands.jspzQzpgzEzzSzppdocszSzuszSzcommonzSzdorlandszSzdorlandzSzdmd_i_10zPzhtm#12456410
Input mechanism	An approach, typically utilizing a user interaction device, for data input. Examples include a keyboard and mouse.	

Intolerance	A non-immunological adverse physiological sensitivity to a substance. It may be manifested by an inability to endure, withstand, absorb, or metabolize a substance (e.g. lactose).	
Issue	See Problem.	
Label (verb) DEPRECATED VERB	Use “TAG with a label”.	
Legal-Hold	Note: The system cannot legally-hold various facts. Rather, the system may provide the ability to tag certain data that may be under legal review.	
Link (verb)	To UPDATE data by associating one piece of data with another piece of data. For example, the system may LINK a patient’s encounter note with the patient’s lab results. Another example is that a system may LINK attestable changes to a patient’s record to the author’s identifying information.	
Log (verb)	To TRACK system-initiated or user-initiated activities (including access to data and/or functionality, attempts to access data and/or functionality, actions performed on data and/or functionality, and changes to system characteristics or versions) by storing a chronological trace of these activities. For example, the system may LOG the fact that modifications were made to a patient’s record by storing the date, time, and identity of the user who modified the record as well as what changes were made to that record. Another example is that the system may LOG the fact that updates were applied to a drug-interaction database table, by storing the date and time at which it was updated.	
Logical Record	A Logical Record is a reference to a data record that is independent of its physical location. A Logical Record may be physically stored in two or more locations.	
Maintain	To MANAGE data by storing, updating, and/or removing the data within a system. For example, a system may provide the ability for a clinician to MAINTAIN data by keeping or discarding it. Another example is that a system may provide the ability for a clinician to MAINTAIN data by correcting or annotating it.	
Maintenance	The act of maintaining or the state of being maintained. The work of keeping something in proper condition; upkeep.	http://www.bartleby.com/61/56/M0045600.html
Maintenance and versioning (used as a phrase)	The management of multiple revisions of the same unit of information.	http://en.wikipedia.org/wiki/Versioning

Manage (Data)	To handle data by capturing, maintaining, and rendering data, determining actions about data, and managing data visibility. For example, the system may provide the ability for a user to MANAGE patient and family preferences as they pertain to current treatment plans. Another example is that a clinician's system may provide the ability for the clinician to MANAGE patient data by creating a patient's record, updating a clinical note, utilizing clinical decision support tools, and transmitting the patient's billing information.	
Manage-Data-Visibility	To MANAGE data by de-identifying/re-identifying, masking/unmasking or hiding/unhiding that data. For example, the system may provide the ability for an administrator to MANAGE-DATA-VISIBILITY in terms of who is allowed to view what specific patient data.	
Management	The act or art of managing. The conducting or supervising of something.	http://www.merriamwebster.com/dictionary/management
Mask (verb)	To MANAGE-DATA-VISIBILITY by obscuring (masking) specific data elements in order that this information is not available except to authorized users; viewers of the patient record can see that the data exists but cannot see actual contents. For example, the administrator may MASK the pregnancy status of all patients who are below the age of eighteen except for the obstetric unit staff. Note: the verb "unmask" is an acceptable verb to reverse the action of masking.	
Masking	Data masking is the process of obscuring (masking) specific data elements within data stores. It ensures that sensitive data is replaced with realistic but not real data. The goal is that sensitive customer information is not available outside of the authorized environment. Effective data masking requires data to be altered in a way that the actual values cannot be determined or reengineered, functional appearance is maintained, so effective testing is possible.	Wikipedia
MAY	Indicates an optional, permissible action. Synonymous with 'is permitted'.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Medical	Relating to the study or practice of medicine; "the medical profession"; "a medical student"; "medical school".	http://wordnet.princeton.edu/perl/webwn?s=medical
Medication reconciliation	Medication reconciliation is the comprehensive evaluation of a patient's medication regimen any time there is a change in therapy in an effort to avoid medication errors (e.g., omissions, duplications, dosing errors, or drug interactions), and to observe the patient's medication compliance and adherence patterns. The medication reconciliation process should include a comparison of the existing and previous medication regimens and should occur at every transition of care in which new medications are ordered, existing orders are rewritten, existing order are adjusted, or if the patient has added nonprescription medications to [his or her] self-care.	ImprovingCareTransitions:OptimizingMedicationReconciliation.March2012.AmericanPharmacistsAssociationandtheAmericanSocietyofHealthSystemsPharmacists.See:http://www.ashp.org/DocLibrary/Policy/PatientSafety/Optimizing-Med-Reconciliation.aspx

Merge DEPRECATED VERB	Instead, use INTEGRATE.	
Messaging standard	A messaging standard, in the context of Health IT, specifies the structure or format of electronic data exchange, enabling disparate healthcare applications to exchange key sets of clinical and administrative data. "HL7's Version 2.x (V2) messaging standard is the workhorse of electronic data exchange in the clinical domain and arguably the most widely implemented standard for healthcare in the world. This messaging standard allows the exchange of clinical data between systems. It is designed to support a central patient care system as well as a more distributed environment where data resides in departmental systems."	1. http://www.hl7.org/implement/standards/product_brief.cfm?product_id=146, accessed 5 June 2013
Metadata	Data about data; more specifically, data that provides more information about a piece or set of data.	US Department of Health and Human Services, Office of the Secretary, 45CFR Part 170, Metadata Standards to Support Nationwide Health Information Exchange, page 1, August 9,2011.
Modify Access DEPRECATED VERB	Instead, use: "MANAGE data regarding permissions"	
Non-repudiation	Assurance that the entry or message came from a particular user. It will be difficult for a party to deny the content of an entry or creating it.	http://www.ahima.org/infocenter/guidelines/ltcs/5.1.asp

Notes	The naming rules in this document only apply to “clinical notes.” Within this document we are using the term “clinical note” to have a special meaning. For purposes of this document, a clinical note is a clinical document (as defined by the HL7 CDA Standard) where the document was produced by clinical professionals and trainees either spontaneously (e.g. I write my admitting note) or in response to a request for consultation.. They are to be distinguished from patient reports such as radiology reports, pathology reports, laboratory reports, cardiac catheterization reports, etc., that are generated in response to an order for a specific procedure. Names for most of these later concepts are accommodated well by the clinical LOINC naming structure, and are already well covered by existing terms within the LOINC database.	http://www.regenstrief.org/loinc/discussion/Clinical/ontology.doc
Notice	A Notification, an Alert, or a Reminder. Information presented or transmitted to an interested party. For example, an alert, reminder, note, or message may convey an announcement, warning, issue, or new state/condition. Note: Use of these terms may have differing legal connotations in various realms.	
Notification	A type of Notice that does not necessarily require recipient’s action.	
Notify DEPRECATED VERB	Instead, use “RENDER or PRESENT or TRANSMIT a notification to a person or another system (including a device)”.	
Nullify DEPRECATED VERB	Instead, use “TAG as nullified”.	
Obfuscation	In programming, an often practiced process to make code unclear for someone else to follow. It is an intentional effort to mislead or confuse. The term obfuscation is often used in virus issues.	http://www.csgnetwork.com/glossaryo.html
Obsolete (verb) DEPRECATED VERB	Instead, use “TAG as obsolete”.	
On-demand	The manual exercise of certain system functionality. For example, drug-drug interaction checking may automatically occur at the moment that a clinician is ordering a certain drug. However, the clinician may also want to examine the drug interactions that may occur for a drug that was previously ordered by another physician; thus, the clinician would exercise the drug-drug interaction checking functionality “on demand”. Another example is that the clinician may want to examine the alerts and notifications that exist for a given set of drugs (without having a specific patient in mind).	

Order (verb) DEPRECATED VERB	Instead, use “ENTER the parameters for an order”.	
Order sets	Order sets are prepared in (order) sessions as multi-disciplinary templates, including nursing, medical, pharmacy and allied health action items. The order sets have been reviewed by professional service organizations and are organized into problem oriented care plans wherein each order set serves to organize one session or phase of the overall plan of care. Problem and session encoding of order sets assure that order sets are employed in relevant clinical contexts and care plans, and that order sessions may be merged when multiple guidelines apply to a single patient.	HL7 Clinical Decision Support team, Jim McClay, SAGE guideline consortium, University of Nebraska Medical Center.
Organization	Unique framework of authority within which a person or persons act, or are designated to act towards some purpose.	ISO 18308, [ISO 6523-1:1998]
Other system	A separate system that is an affiliated, federated, integrated, or partnering system.	
Patient	One who is suffering from any disease or behavioral disorder and is under treatment for it.	http://216.251.232.159/semdweb/internetsomd/ASP/1549985.asp
Patient and family preferences	Health care treatment choices influenced by but not limited to language, religious, or cultural preferences selected by the patient and family.	
Patient identifier	A Patient Identifier is a set of data that is used for uniquely distinguishing one patient from another patient.	
Patient record	A paper or electronic tool for collecting and storing information about the healthcare services provided to a patient.	Health Information Management Technology: An Applied Approach. Merida L. Johns, PhD, RHIA, Editor, AHIMA, Chicago, IL, 2007
Patient representative	Designated to bearing the character or power of the patient; acting for the patient’s benefit, e.g. guardian, legal representative, surrogate, or advocate.	http://cancerweb.ncl.ac.uk/cgi-bin/omd?representative
Patient-level data	Within the context of the Population Health arena, the term “patient-level data” refers to data that is collected (and analyzed) regarding a single patient. For example, “Person123 is left-handed”. (Note: patient-level data is often de-identified within the Population Health context.) Furthermore, data regarding a single patient can sometimes be aggregated within the scope of that patient’s data. For example, Person123 has been pregnant six times. Compare with “aggregate-level data”.	

Patient-originated data	Patient-provided and/or patient-entered data. For example, an individual patient (or the patient's representative) may provide or enter health information from personal memory and/or by using information that was recorded on a piece of paper. For example, a patient may enter "1970-12-29" into a date-of-birth field.	
Permission (Parental)	Parental Permission is an affirmation or agreement, provided by the parent or guardian of a patient, to undertake a clinical action. "The American Academy of Pediatrics believes that in most cases, physicians have an ethical (and legal) obligation to obtain parental permission to undertake recommended medical interventions. In many circumstances, physicians should also solicit a patient assent (see Assent [Patient]) when developmentally appropriate. In cases involving emancipated or mature minors with adequate decision-making capacity, or when otherwise permitted by law, physicians should seek informed consent (see Consent [Informed]) directly from patients."	"Informed Consent, Parental Permission, and Assent in Pediatric Practice", Pediatrics Vol. 95 No. 2 February 1, 1995 (re-affirmed May 2011), pp. 314 -317, American Academy of Pediatrics, Committee on Bioethics, at: http://pediatrics.aappublications.org/content/95/2/314.abstract (accessed 6 Feb 2013)
Permit Access DEPRECATED VERB	Instead, use "AUTHENTICATE a user and AUTHORIZE access based on permissions assigned to that user".	
Persist DEPRECATED VERB	Instead, use "STORE".	
Personal health record	Health record, or part of a health record, for which the subject of care or a legal representative of the subject of care is the data controller	ISO 18308
Phenotype	The physical appearance of an organism as distinguished from its genetic makeup. The phenotype of an organism depends on which genes are dominant and on the interaction between genes and environment.	The American Heritage® Science Dictionary Copyright © 2005 by Houghton Mifflin Company.
Policy (privilege management and access control)	A set of legal, political, organizational, functional and technical obligations for communication and cooperation.	ISO 18308, [ISO/TS 22600-1: 2005]
Population Health	Collections of health-related concepts (for example, health outcomes) that pertain to groups, rather than to individuals. Population Health groups are often distinguished based on stakeholder interest, for example, according to geography, employment, socioeconomic sector, age, or ancestry.	

Practice guidelines	Systematically developed statements to standardize care and to assist in practitioner and patient decisions about the appropriate health care for specific circumstances. Practice guidelines are usually developed through a process that combines scientific evidence of effectiveness with expert opinion. Practice guidelines are also referred to as clinical criteria, protocols, algorithms, review criteria, and guidelines.	www.mentalhealth.samhsa.gov/publications/allpubs/MC98-70/default.asp
Present	To RENDER data by delivering the data to local users in a meaningful and appropriate way. For example, the system may PRESENT to a physician (upon manual request) a list of patients who are scheduled for care today, ordered by time-of-day, with the patient's known diagnosis using the physician's preferred terminology and language of choice. Another example is that the system may PRESENT an alert automatically when a newly-arriving lab value is received that is out of normal range. Another example is that a system may PRESENT to a physician a patient's lung respiration sounds. Another example is that a system may PRESENT patient-instructions using an audio and video system. Note: It is reasonable to assume that any data that is presented ought to be formatted, filtered, translated, transformed, mapped, and/or normalized, etc., as appropriate.	
Prevention	Actions taken to reduce susceptibility or exposure to health problems (primary Prevention), detect and treat disease in early stages (secondary prevention), or alleviate the effects of disease and injury (tertiary prevention).	http://depts.washington.edu/hsic/resource/glossary.html
Principal (adjective)	Highest in rank, authority, character, importance, or degree; most considerable or important; chief; main; as, the principal officers of a Government; the principal men of a state; the principal productions of a country; the principal arguments in a case (e.g. principal diagnosis).	http://cancerweb.ncl.ac.uk/cgi-bin/omd?principal
Principal (noun)	A user, organization, device, application, component, or object. The person primarily or ultimately liable on a legal obligation.	http://www.meriam-webster.com/cgi-bin/dictionary/principal
Principal provider	The person who is the most responsible and accountable for managing or coordinating the members of a care team(s) that deliver health care to an individual.	
Principle	An accepted or professed rule of action or conduct, an adopted rule or method for application in action.	Dictionary.com
Print DEPRECATED VERB	Instead, use RENDER, PRESENT, OR TRANSMIT, depending on the context.	

Prioritize DEPRECATED VERB	Instead, use “TAG with a priority level”, or “DETERMINE priorities”.	
Privacy	The quality or state of being hidden from, or undisturbed by, the observation or activities of other persons, or freedom from unauthorized intrusion; in healthcare-related contexts, the right of a patient to control disclosure of protected health information.	AHIMA Master Glossary, 3rd Edition
Problem	Entity for which an assessment is made and a plan or intervention is initiated. NOTE The term “issue” is often used rather than “problem” by many allied health professions, especially in the more social/psychological disciplines. The term “condition” is also sometimes used to describe pregnancy and other non-disease health states which nevertheless usually involve interaction with a health system.	ISO/TR 12773-1
Problem list	The problem list of a given individual can be described by formal diagnosis coding systems (such as DRGs, NANDA Nursing Diagnosis, ICD9, DSM, etc.) or by other professional descriptions of health care issues affecting an individual. Problems can be short or long term in nature, chronic or acute, and have a status. In a longitudinal record, all problems may be of importance in the overall long term care of an individual, and may undergo changes in status repeatedly. Problems are identified during patient visits, and may span multiple visits, encounters, or episodes of care.	HL7 Version 3.0 Edition 2006 Glossary
Profile	A subset of the Functional Model, in which functions have been designated (sometimes in varying degrees) for certain EHR-S implementations or Healthcare Delivery Settings.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Protocol	A set of instructions that describe the procedure to be followed when investigating a particular set of findings in a patient, or the method to be followed in the management of a given disease. Please refer to: Algorithm, Care Pathway, Practice Parameter.	http://www.coiera.com/glossary.htm

Provide the ability to ...	The term "… provide the ability to…" conveys the notion that the corresponding system functionality will enable a user to perform a given task, rather than having the system perform the task itself (i.e., without user intervention). Additional consideration: An EHR system may not always be capable of correctly performing a specific action automatically. Consider the difference between the following two criteria: "The system SHALL LINK a record to a single patient" and "The system SHALL provide the ability to LINK a record to a single patient." The first criterion requires the system to perform the task of identifying a patient and linking a certain record to a single patient. In this case, the system may not be able to perform this task to an acceptable level of assurance (for example, when a patient uses two different first names "Liz" and "Elizabeth"). The second criterion requires the system to provide the user with the ability to uniquely identify a patient and to link a certain record to that patient (for example, via a screen that displays a list of potentially-matching patients whereby the user can manually link the record to the correct patient).	
Provide access to DEPRECATED VERB	Instead, use CONTROL ACCESS, or PRESENT, as appropriate to the specific context.	
Provider	Person or organization involved in or associated with the delivery of healthcare to a subject of care, or caring for the well-being of a subject of care.	ISO/TR 12773-1
Pseudonymize	To affix an alternate identity to EHR record entry/data content. Pseudomynization allows data to be re-identified by the source or other authorized entity. Per Wikipedia: "Pseudonymization" is a procedure by which the most identifying fields within a data record are replaced by one or more artificial identifiers. There can be a single pseudonym for a collection of replaced fields or a pseudonym per replaced field. The purpose is to render the data record less identifying and therefore lower customer or patient objections to its use. Data in this form is suitable for extensive analytics and processing.	
Public Health	1. An area of health care that deals with the health of populations in geo-political areas, such as States and counties. 2. A field of medicine concerned with safeguarding and improving the health of the community as a whole.	1. Pocket Glossary for Health Information Management and Technology, Second Edition, 2010 2. Dorland's Medical Dictionary

Purge	To REMOVE data by making it unrecoverable at the storage and/or media-level. For example, the system may PURGE the patient record for John Smith according to a rule that targets all records that are older than seven years. (Note: Destroy and Purge are synonyms; PURGE is the preferred term.)	
Query DEPRECATED VERB	Instead, use ANALYZE or RENDER (or its children Action-Verbs), because queries or searches are implied when rendering or analyzing data.	
Reactivate	Instead, use TAG with an appropriate qualifier. Reactivation of certain information may be required when that data, previously deprecated or made inactive, becomes valid again. For example, a health information management professional may desire to TAG a certain clinical term as reactivated.	
Real-time	Since the concept of "real-time" is ambiguous, describe the actual event. For example, instead of "Present the drug-drug interaction notification in real-time"; rather, "Present the drug-drug interaction notification at the time that the drug is being prescribed".	
Receive	To CAPTURE data from an external source by taking in that data without manual / real-time user intervention. For example, the system may RECEIVE various emails for a clinician who will later review them. Another example is that the system may RECEIVE from authenticated and authorized external systems laboratory results for a given patient. Another example is that the system may RECEIVE a facsimile transmission from an external device.	
Reconcile DEPRECATED VERB	Instead, use ANALYZE and DECIDE, or DETERMINE, or HARMONIZE depending on the context and the meaning intended.	
Record (noun)	Information created, received and maintained as evidence and information by an organization or person, in pursuance of legal obligations or in the transaction of business.	ISO/TR 12773-1
Record (verb) DEPRECATED VERB	Instead, use STORE (or its children Action-Verbs).	

Record entry	Data captured by a system. Making a Record Entry is accomplished by entering data or auto-populating, importing, or receiving data into a system. The EHR System captures actions taken and creates corresponding Record Entries. Record Entries provide persistent evidence of Action occurrence, context, disposition, facts, findings and observations. From the point of Record Entry origination to the end of its lifespan, the EHR System manages each Entry consistent with and according to scope of practice, organizational policy and jurisdictional law. In support of individual health and in provision of healthcare to individuals, Actors perform Actions and Actions have corresponding Entries in the EHR Record, (i.e., Action instances are documented by Record Entry instances). Record Entries may be captured during the course of the Action or sometime thereafter. The Actor (author/source) of the Record Entry may be the same as an Actor performing the Action or not. The EHRS Functional Model does not specify a particular relationship of Actions and corresponding Record Entries. It may be one to one, many to one or even one to many.	ISO21089,Section12
Recover	To STORE data by rebuilding original data using backups of data. For example, the system may RECOVER last week's data following a hard disk failure, using an offsite backup copy. (See BACKUP.)	
Registry	A written, official or formal record of information, or the place where such records are kept.	http://en.wikipedia.org/wiki/Registry
Re-identify	To MANAGE-DATA-VISIBILITY by combining data in such a way that the patient's identity is re-established according to scope of practice, organizational policy, and/or jurisdictional law. For example, the system may RE-IDENTIFY de-identified data by providing a key that allows authorized users to re-establish the link between a given patient and that patient's de-identified data.	
Reject DEPRECATED VERB	Instead, use ‘’PRESENT or RENDER a message of rejection" or "TAG as rejected".	
Reminder	A type of Notice that is specifically to prompt the recipient with information they may have previously received. (e.g. an appointment reminder). Distinct from an alert, where immediate action is required or an action is contraindicated (e.g., use of antibiotics).	

Remove	To MAINTAIN data by making the data inaccessible or unrecoverable according to scope of practice, organizational policy, and/or jurisdictional law. For example, a system may, at a physician's request, REMOVE by purging patient information that was received by mistake. Another example is that a system may, upon request by an administrator, REMOVE by deletion the schedule of outpatient clinic opening hours. NOTE 1: The data may be deleted either by removing the data's pointer from the directory or by overwriting the data in such a way that the original data is unrecoverable. NOTE 2: In the case where the data becomes invalid but needs to remain in the system, the word TAG is preferred over the word REMOVE or "Nullify". This type of action is considered a data "Tagging" process and not a data deletion process. For example, a health information management professional may desire to TAG a certain clinical term as obsolete, but the term needs to remain in the system for backward compatibility purposes.	
Render	To MANAGE data by extracting, presenting and transmitting data to users or systems. For example, the system may RENDER a list of patients with a given disease that has been extracted from the clinic's active patient records. For example, the system may RENDER laboratory results by presenting them on a computer screen. Another example is that the system may RENDER data by transmitting a drug prescription to a pharmacy.	
Replace DEPRECATED VERB	Instead, use EDIT, or "DELETE the old and SAVE the new", or "TAG as obsolete and SAVE the new", based on the context.	
Report (noun)	A collection of facts and figures that may be printed, describing in detail an event, situation, or the like, usually as the result of observation, inquiry, etc.; i.e. a medical report on the patient that may be printed.	
Report (verb) DEPRECATED VERB	Instead, use "RENDER a report", or "PRESENT a report".	
Repudiate DEPRECATED VERB	Instead, use "TAG as repudiated or rejected".	

Repudiation	The denial by a user or a system that it was the source of certain information; or the sender or receiver of a message, or the author of an action requested from the system. Note regarding non-repudiation: typically, systems assist in preventing a user from repudiating actions by capturing a digital signature, activating a confirmation service, and time stamping actions.	
Resource utilization	Measurement of the effectiveness of resource usage.	
Restore	To STORE data to the production system by using previously archived data. For example, the system may RESTORE patient-encounter data for a returning patient whose data had been archived due to inactivity. Another example is that the system may RESTORE, for evidentiary support, patient data that had been archived after the patient expired. (See ARCHIVE.)	
Result (noun)	The conclusion or end to which any course or condition of things leads, or which is obtained by any process or operation; an outcome. The act or process of applying general principles or formulae to the explanation of the results obtained in special cases.	
Retain DEPRECATED VERB	Instead, use STORE (with the possible addition of language that includes the notion that retention management may be needed to accommodate scope of practice, organizational policy, or jurisdictional law). For example, the system may provide the ability to STORE personal health information, and DELETE that data only as allowed by the organization's data-retention policies.	
Revoke-Access DEPRECATED VERB	Instead, use "CONTROL ACCESS by eliminating permissions to use system functionality or to manage data".	
Role	Set of competences and/or performances associated with a task	ISO 18308, [ISO/TS 22600-1:2007]
Role Code	Specific classification codes for further qualifying RoleClass codes	Normative Edition HL7 V3 2012
Save	To STORE data by placing it onto an electronically-accessible device for preservation. For example, a clinician may SAVE a given patient's demographic data or a newly-prescribed medication. Another example is that an administrator may SAVE an updated list of physicians that have practice privileges at the local hospital.	
Scope of Practice	A terminology used by licensing boards for various medically-related fields that defines the procedures, actions, and processes that are permitted for the licensed individual.	http://www.answers.com/topic/report

Seamless	Interoperability standards enable an Electronic Health Record System (EHR-S) to operate as a set of applications. This results in a unified view of the system where the reality is that several disparate systems may be coming together. Interoperability standards also enable the sharing of information between EHR systems, including the participation in regional, national, or international information exchanges. Timely and efficient access to information and capture of information is promoted with minimal impact to the user.	
Search (verb) DEPRECATED VERB	Instead, use ANALYZE or RENDER (or its children action-verbs), because queries or searches are implied when rendering or analyzing data. For example, instead of saying "The system SHALL provide the ability to search patient records based on previous names", one could say ''The system SHALL provide the ability to PRESENT a list of records with possible patient name matches using previous patient names".	
Secure (System) (verb)	To ensure system reliability and integrity by controlling access to system functionality and/or data, tracking activities, and sustaining system operations. For example, the system may provide the ability for an administrator to SECURE a system by setting configuration parameters for controlling access, tracking, and sustaining system operations. Another example is that the system may SECURE access to a patient's record by controlling access to its content, tracking users who have modified the patient's record, and sustaining the record's availability on a continual basis.	
Severity Level	Warnings, alerts, notifications, and other types of messages may be issued in order to convey differing states of urgency of various conditions.	
Select DEPRECATED VERB	Instead, use "ENTER a selection".	
Semantic interoperability	The ability of data shared by systems to be understood at the level of fully defined domain concepts	ISO 18308
SHALL	Indicates a mandatory requirement to be followed (implemented) in order to conform. Synonymous with "is required to".	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
SHOULD	Indicates an optional recommended action, one that is particularly suitable, without mentioning or excluding others. Synonymous with "is permitted and recommended".	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
SIG	(Latin abbreviation for Signetur – "Let it be labeled") Instructions that direct a patient regarding the recommended use of a medication.	

Sign (verb) DEPRECATED VERB	Instead, use "TAG-with-authenticated-signature". For example, a system may TAG a patient note with an authenticated signature when the physician completes the patient's note.	
Signature Type	Also known as Signature Method or Attestation Method. An electronic health information document (or message) often requires one or more signatures that indicate the author(s) of the health information. (Note: Health information can either be authored by a human or a device.) In order for a given signature type to be interpreted correctly by an electronic system, metadata must exist that indicates the method by which the signature may be interpreted; when the correct method is applied to a given signature type, the signature can be correctly rendered and evaluated.	
Single logical patient record	The integration of health information and knowledge from different EHR-S sources to create a single, organized and accessible patient health record that can be managed from a single logical point; and will allow referencing of all available health information pertaining to a specific individual maintained throughout an integrated health information network. An indexed system that will provide access to all stored data for a particular patient.	http://www.ercim.org/publication/Ercim_News/enw29/tsiknakis.html "An Integrated Architecture for the Provision of Health Telematic Services in a Regional Network." By Monolis Tsiknakis and Stelios Orphanoudakis, Information Technology in Mediciane and Health Care, ERCIM News, No. 29 – April 1997.
Situational criterion	Criterion that is required if the circumstances given are applicable.	HL7 EHR-S Functional Model Chapter 2: Conformance Clause
Specialized views	Computer customized view based on encounter specific values, clinical protocols and business rules.	
Standard (Recognized)	An adjective that identifies the object noun (e.g. an assessment, template, guideline) as originating from some regional, national or international body that is generally considered to be the authoritative source for such standard.	Mosby's Medical Dictionary, 8th edition. © 2009, Elsevier
Standard (Locally Defined)	An adjective that identifies the object noun (e.g. An assessment, template, guideline) as originating from some local (e.g. health care organization, facility) source that is generally considered to be the authoritative source for such standard.	
Standards of practice	An umbrella term that includes key documents which describe the responsibilities and define safe practice. These documents include: professional standards, ethical guidelines, entry-level competencies, provincial regulations, standards of care, and practice guidelines.	http://www.dietitians.ca/career/i5.htm

State (verb) DEPRECATED VERB	Instead, use TAG with an appropriate qualifier. Affirm, Assert, Declare, Indicate, and State are synonyms.	
Store (verb)	To MAINTAIN data by backing up, decrypting, encrypting, restoring and saving that data onto electronically accessible devices. For example, a clinician may STORE a given patient's demographic data or a newly-prescribed medication. Another example is that an administrator may configure a system to STORE progressive copies of certain data on a regularly-scheduled basis for backup purposes. Note: data may be stored as plain text or in encrypted or compressed form.	
Structured data	Structured health record information is divided into discrete fields, and may be enumerated, numeric or codified. Examples of structured health information include: patient address (non-codified, but discrete field) diastolic blood pressure (numeric) coded result observation coded diagnosis patient risk assessment questionnaire with multiple-choice answers. Context may determine whether or not data are unstructured, e.g., a progress note might be standardized and structured in some EHR-S (e.g., Subjective/Objective/ Assessment/Plan) but unstructured in others.	
Structured text	Computer functions that return a single value.	
Subject of care	One or more persons scheduled to receive, receiving, or having received healthcare. NOTE The terms "patient" and "client" are synonymous with subject of care in a health record context and are commonly used instead of the more formal term "subject of care".	ISO/TR 12773-1 NOTE 1 Adapted from ISO 13606-1:2008.
Summary list	A shortened version of something that has been said or written, containing only the main points.	http://encarta.msn.com/encnet/features/dictionary/DictionaryResults.aspx?refid=1861716863

Support (verb) DEPRECATED VERB	Instead, use “PRESENT templates to do XYZ”, or DETERMINE, or other Action-Verbs depending on the context and functionality to specify.	
Supportive functions	Supportive EHR-S functions are the subset of EHR-S functions that assist with the administrative and financial requirements associated with the delivery of healthcare. Supportive EHR-S functions also provide input to systems that perform medical research, promote public health, and seek to improve the quality of healthcare delivered.	
Suspend-Access DEPRECATED VERB	Instead, use “CONTROL ACCESS by temporarily withholding permissions to use system functionality or to manage data”.	
Syntactic interoperability	The capability of two or more systems to communicate and exchange data through specified data formats and communication protocols	ISO 18308
Synthesize DEPRECATED VERB	Instead, use “ANALYZE and STORE” or “ANALYZE and PRESENT”.	
Tag (verb)	To UPDATE data by marking it for special use. For example, a nurse may TAG the previous week’s records for patients that presented with a severe cough and fever. Another example is that a general practitioner may TAG certain data for review by an oncologist. Another example is that an administrator may TAG an interchange standard version as being deprecated. Note: see “flag” if the meaning is to signal a situation. Note: the verb “untag” is an acceptable verb to reverse the action of tagging.	
Task	A unit of work. A task (in the electronic health record sense) may be a clinical task (i.e., a task that occurs as part of the process of providing care for a patient) or a non-clinical task (e.g., an administrative task such as updating the list of providers who have admitting privileges at the local hospital). A task may arise in an ad hoc fashion or may appear according to a schedule. A task may be placed on a list and assigned to a person, a group of people, or to an automated mechanism; a task may also be shared, reassigned, prioritized (or re-prioritized), routed, corrected, updated, cancelled, or suspended.	

Term	Verbal designation of a general concept in a specific subject field	ISO 18308, [ISO 1087-1: 2000]
Terminological system	Set of concepts structured according to the relations among them, each concept being represented by a sign which denotes it. NOTE: In terminology work, three types of such signs (designations) are distinguished: symbols, appellations, and terms.	ISO 18308, [merging ISO/IEC 11179-1:2004 and ISO 1087-1:2000 definitions]
Terminology Services	Terminology Services (TS) are a set of services that present and apply vocabularies, both controlled and uncontrolled, including their member terms, concepts and relationships. This is done for purposes of searching, browsing, discovery, translation, mapping, semantic reasoning, subject indexing and classification, harvesting, alerting, etc.	
Text	In information technology, text is a human-readable sequence of characters and the words they form that can be encoded into computer-readable formats such as ASCII. Text is usually distinguished from non-character encoded data, such as graphic images in the form of bitmaps and program code, which is sometimes referred to as being in "binary" (but is actually in its own computer-readable format).	http://searchsmb.techtarget.com/sDefinition/0,,sid44_gci213853,00.html
Timestamp (noun)	A timestamp is the current time of an event that is recorded by a computer. Through mechanisms such as the Network Time Protocol (NTP), a computer maintains accurate current time, calibrated to minute fractions of a second.	http://whatis.techtarget.com/wsearch/1,290214,sid9,00.html?query=timestamp
Timestamp (verb) DEPRECATED VERB	Instead, use “TAG with a timestamp”.	
Track (verb)	To SECURE a system by logging and auditing system-initiated and/or user-initiated activities. For example, the system may TRACK the amount of time that the system was unavailable last month. Another example is that the system may provide the ability for an administrator to TRACK the number of active users of a newly-installed set of system functionality.	
Transact data	The act of processing a logical unit of information. For example, data received from an external system may be committed (or “transacted”) to a local database. Note: the transaction of a given logical unit of information may actually involve one or more transmissions or receptions of data between systems. Another example is that a system may transact local data to an offsite, long-term data storage facility.	

Transmit	To RENDER data by delivering the data to devices or other systems in a meaningful and appropriate way. For example, the system may (without human intervention) TRANSMIT an alert to a physician's beeper. Another example is that the system may (upon human intervention) TRANSMIT a given patient's encounter summary to an external facility. Another example is that the system may TRANSMIT data to another facility after mapping local codes to national codes. Note: It is reasonable to assume that any data that is transmitted ought to be formatted, filtered, translated, transformed, mapped, and/or normalized, etc., as appropriate.	
Treatment option	One of many remedies with object of effecting a cure.	The American Heritage Dictionary of the English Language
Treatment plan	See Care Plan.	HL7 Clinical Decision Support team, Jim McClay, SAGE guideline consortium, University of Nebraska Medical Center.
Treatment protocol	A plan to apply remedies with the objective of effecting a cure.	The American Heritage Dictionary of the English Language
Trigger (verb) DEPRECATED VERB	Instead, depending on the context, use "DECIDE on a course of action based on an analysis of certain data and rules", or "DECIDE and RENDER some information (for example, an alert or a notification) based on the analysis of certain data and rules".	
Trusted Information Exchange environment	A Trusted Information Exchange environment ensures integrity, confidentiality, and availability of sensitive data in the process of information exchange between participating parties. The participating parties agree to protect information exchanged by implementing certain administrative and governance procedures according to scope of practice, organizational policy, and/or jurisdictional laws. (For example, a Trusted Information Exchange environment is known as a "Chain-of-Trust Agreement in the U.S. realm.)	
Unhide	To MANAGE-DATA-VISIBILITY by making visible the existence of previously hidden information (see HIDE). For example, the system may provide the ability for a patient to UNHIDE his psychiatric record, and hence the existence of that part of his record becomes visible to all authorized clinicians.	
Unmask	To MANAGE-DATA-VISIBILITY by making masked information visible. For example, the administrator my desire to UNMASK certain patient financial information for the admission Department. For example, a system may provide the ability for an emergency department physician to UNMASK a patient's pregnancy status that was presented by the system as "******", to reveal a status of "Pregnant".	

Untag	To UPDATE data by removing marking for special use. For example, a nurse may UNTAG the previous week's records for patients that presented with a severe cough and fever that had been previsouly tagged. Another example is that a general practitioner may UNTAG certain data after completion of review another provider.	
Uniquely identifying	A method to enable the identification of a single object (e.g. patient, provider or test) that is derived from one or more data elements.	
Unstructured data	Unstructured health record information is information that is not divided into discrete fields AND not represented as numeric, enumerated or codified data. General examples of unstructured health record information include: text; word processing document; image; multimedia. Specific examples include: text message to physician; patient photo; letter from family; scanned image of insurance card; dictated report (voice recording).	
Unstructured text	Text lacking a definite structure or organization; not formally organized or systematized.	http://www.answers.com/library/Dictionary;jsessionid=2nn5846gl7gmh-cid-1992345752-sbid-lc07a
Update (verb)	To MAINTAIN data by annotating, editing, harmonizing, integrating, linking and tagging the data. For example, a clinician may UPDATE a patient's medication dosage. Another example is that the system may UPDATE a patient's record.	

Versioning	The management of multiple revisions of the same unit of information.	http://en.wikipedia.org/wiki/Versioning
View (noun)	Specific information displayed on a computer monitor after it has been filtered by the system. See "Display."	
View (verb) DEPRECATED VERB	Instead, use PRESENT.	ISO 18308, [ISO/EN 13606-1:2008]

Annex D
(informative)

History of the Action-Verb Hierarchy

This Glossary is the result of a sustained effort to increase the rigor, accuracy, and consistency of the set of terms used in the EHR-S FM and the Personal Health Record System Functional Model (PHR-S FM).

D.1 Original Trigger

The EHR-S FM began as a set of functions that were based on material that the Institute of Medicine (IOM) offered to the health care industry in 2003. The material did not include a Glossary, but relied on common understanding of the health care –related and information systems terms. Those functions were vetted and expanded by the HL7 EHR Special Interest Group (which eventually became the EHR Work Group). The various functions were developed by individual authoring teams of the Direct Care, Supportive, and Information Infrastructure Chapters. As the number of functions grew, the need to minimize redundancy among functions became more acute. For example, one team created functionality that envisioned "access" to patient demographic data; another group envisioned reading, updating, and writing patient demographic data. Were those two approaches duplicative? If not, what were the differences? The EHR WG eventually launched an effort to clarify the meaning of Action-Verbs.

D.2 How the first version of the Glossary was developed

An analysis was performed across all the functions of the EHR-S FM and a rudimentary hierarchy was created that categorized the various Action-Verbs. However, new functionality was being created; other functionality was being merged or re-categorized – resulting in a moving target.

D.3 Second version of the Glossary

When the PHR-S FM was created, the lessons and advances of the EHR-S FM were applied to create a new, richer set of Action-Verbs on which the PHR-S FM was based. This effort resulted in a need to align the PHR-S FM and the EHR-S FM Glossaries as the second release of the EHR-S FM was being developed.

D.4 Current version of the Glossary

Beginning in May 2010, and over period of five months, a small team of volunteers reviewed both Glossaries (see the two corresponding versions of the Action-Verbs hierarchies below), harmonized the various terms, researched existing definitions and other standards, considered how the terms might be used in various international realms and how the terms might be translated into other languages, and generated a more robust set of Action-Verbs (which resulted in the current version of the Glossary).

The following two (2) Action-Verb hierarchies from EHR-S FM and PHR-S FM were the starting point to develop the current version of the Glossary.

EHR-S Functional Model				
EHR-S FM Verb Hierarchy : 21 total terms (including "Manage") All terms found in EHR-S FM Verb Hierarchy are included in the PHR-S FM Verb Hierarchy (note: "input device" changed to "input" in PHR-S FM Verb Hierarchy)				
MANAGE				
Capture		Maintain		
Input Device (Ext.)	Create (Int.)	Read	Update	Remove Access

	View Report Display Access	Edit Correct Amend Augment	Obsolete Inactivate Destroy Nullify Purge

Table 1: EHR-S Functional Model Verb Hierarchy

PHR-S Functional Model							
PHR-S FM Verb Hierarchy: 49 total terms (including “Manage”) “Capture” expanded with specific terms under “Input” and “Create” “Render” added as a subcategory with concepts of “read” and “output” Concepts of “store” and “Restrict Access” added to “Maintain”							
MANAGE							
Capture		Maintain				Render	
Input (External)	Create (Internal)	Store	Update	Restrict Access	Remove Access	Read (Internal)	Output (External)
Receive Accept Download Import	Enter Compute Record	Save Backup Compact Encrypt Archive	Edit Correct Amend Augment Annotate Comment Associate Tag	Hide Mask Filter	Obsolete Inactivate Destroy Nullify Purge	View Report Display Access Present	Send Upload Export Synchronize

Table 2: PHR-S Functional Model Verb Hierarchy

Annex E
(informative)

Contributing Organizations

Several standards organizations were invited to review and comment on the ballot. The organizations included:

- CDISC
- CEN
- IHTSDO
- HL7 (Health Level 7)
- ISO
- GS1

Annex F
(informative)

Background

F.1What is HL7?

Established in 1987, Health Level Seven (HL7) is an American National Standards Institute (ANSI) accredited, not-for-profit standards-development organization, whose mission is to provide standards for the exchange, integration, sharing, and retrieval of electronic health information; support clinical practice; and support the management, delivery and evaluation of health services. ANSI accreditation, coupled with HL7's own procedures, dictates that any standard published by HL7 and submitted to ANSI for approval, be developed and ratified by a process that adheres to ANSI's procedures for open consensus and meets a balance of interest requirement by attaining near equal participation in the voting process by the various constituencies that are materially affected by the standard (e.g., vendors, providers, government agencies, consultants, non-profit organizations). This balance of interest goal ensures that a particular constituency is neither refused participation nor is it allowed to dominate the development and ratification of a proposed standard. More information and background on ANSI is available on their website at: http://www.ANSI.org

F.2The HL7 Electronic Health Records Work Group

The HL7 Electronic Health Records Special Interest Group (EHR SIG) was established in the spring of 2002. In the spring of 2003 the HL7 group began efforts to develop a standardized functional specification for Electronic Health Records Systems (EHR-S). In May 2004 the SIG was promoted to a full HL7 Technical Committee, becoming the EHR TC. The EHR TC is intended primarily to serve as a body which promotes the uptake of Electronic Health Record (EHR) implementation by standardizing the functions that may be present, based on user selection, in an EHR-S.

The Department of Health and Human Services, the Veterans Health Administration, the Health Information Management Systems Society and the Robert Wood Johnson Foundation, in a public-private partnership, approached HL7 to accelerate their existing work to develop a consensus standard to define the functions of an EHR-S. HL7, through its EHR SIG, responded by developing an EHR-S Functional Model that passed ballot as a Draft Standard for Trial Use (DSTU) in April 2004. The Functional Model DSTU was published and formally registered with the American National Standards Institute (ANSI) in July 2004. The Functional Model was then balloted and passed as a normative standard as part of the January 2007 HL7 Work Group Meeting and is now registered as a normative standard with ANSI

Learning important lessons from the ballot process, a Functional Model with a clearer, more simplified list of functions, has been created. The HL7 EHR System Functional Model provides a reference list of functions that may be present in an Electronic Health Record System (EHR-S). The Function List is described from a user perspective with the intent to enable consistent expression of system functionality. This EHR-S Model, through the creation of Functional Profiles, enables a standardized description and common understanding of functions sought or available in a given setting (e.g. intensive care, cardiology, office practice in one country or primary care in another country).

F.3What is the EHR-S Functional Model Package?

The documents in this package comprise Release 2.0 of the EHR-S Functional Model and feature content revisions based on Release 1 of the standard. The current version merges the separate Chapters of the previous version into two documents (to conform to ISO publication requirements). The package contains the following artifacts:

Document Sections	File Name
Overview Conformance Glossary Read Me Guide	EHRS_FM_R2_2014APR.PDF

EHR-S Functional Model Functions List	EHRS_FM_R2_ANEX_20140311.XLSX

Table 1: Functional Model Package

Note that the related document “How-To Guide for Creating Functional Profiles” is published separately.

Annex G
(informative)

Acknowledgements

G.1 General Acknowledgements

The committee is indebted to the following past co-chairs and facilitators for their contributions towards all parts of this model and the material presented here. We are thankful to every person who was able to contribute, whether for a short period of time, or week-in/week-out work. For the early mornings and the late evenings and weekends. We cannot thank you enough. Direct and indirect participants in the development of the model, including workgroup contributors and other participants, can be found in the "Contributor Listing" found at www.HL7.org/EHR in the "documents" section.

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Table 1: Acknowledgements

G.2 Glossary Acknowledgements

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Table 2: Glossary Acknowledgements

Annex H
(informative)

Other Offerings and Requests from the EHR Work Group

The “How-to-Guide for Developing Functional Profiles“ is a supporting document that is published separately.

The ISO/HL7 DIS 16527 Personal Health Record System Functional Model is the consumer-oriented version of the EHR-System Functional Model and is available via the HL7 website.

Education on the EHR-S FM, PHR-S FM, and Conformance Criteria are available through tutorials offered at HL7 Working Group Meetings and HL7 Educational Summits.

HL7 Ambassadors are available to offer HL7 Ambassador Briefing presentations on a variety of topics, including the EHR-S FM and PHR-S FM. Please contact the HL7 Marketing Committee.

If you are developing (or intend to develop) Functional Profiles or other work-products related to the EHR-S FM or PHR-S FM, please inform the EHR WG co-chairs so that they may have the opportunity to support and leverage your work. You may contact them at:

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