Health Level Seven
Child Health Neonatology Functional Profile
for Electronic Health Record Systems

by

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A CAPSTONE PROJECT

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CERTIFICATE OF APPROVAL

This is to certify that the Master's Capstone Project of

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"Health Level Seven
Child Health Neonatology Functional Profile
for Electronic Health Record Systems"

Has been approved

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Abstract

Background: Health Level Seven, an international standards development organization, first developed a Functional Model for Electronic Health Record Systems (EHR-S) in 2004 to provide common language for support functions required for the healthcare setting. Functional profiles, such as the Child Health Functional Profile released in 2008 as a Draft Standard for Trial Use (DSTU), are based upon the EHR-S Functional Model but detail domain specific functions and conformance requirements to support the provision of healthcare in a defined setting. Derived functional profiles, which conform to one or more base functional profiles, inherit and adhere to all the rules of the base profile(s), but add additional requirements and conformance criteria to address more specific functions for care in a given setting or subdomain. This project represents the pre-ballot content for a Draft Standard for Trial Use of the Health Level Seven Child Health Neonatology Functional Profile (Neonatology Functional Profile).

Methods: The HL7 Neonatology Functional Profile, derived from the Child Health Functional Profile, was developed following serial input from subject matter experts in neonatology, pediatrics, and informatics. References to other existing policy statements, standards, guidelines, and relevant reference models in development were also established.

Results: Novel functional content was developed describing maternal record elements relevant to the infant, capturing vital signs and episodic events, screening and decision support, nutrition, respiratory support, and management of unique

circumstance for patient registration and medication administration. Terminology was updated to reflect currently published policy statements by the American Academy of Pediatrics. Relevance to the Agency for Health Research and Quality (AHRQ) Model Children's Electronic Health Record Format and the Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition (*i.e.,* "Meaningful Use") was also noted for future harmonization efforts.

Conclusion: The HL7 Child Health Neonatology Functional Profile provides a detailed reference for unique and recommended content for the provision of care of neonates and infants in the intensive care setting. This work may be leveraged by as a distinct DSTU for future HL7 balloting, or as a tool for the clarification and harmonization of related electronic health record functions.

Introduction & Background

The Health Level Seven (HL7) Child Health Neonatology Functional Profile (Neonatology Functional Profile) is a project of the HL7 Child Health Work Group aimed at developing a draft standard HL7 Functional Profile for electronic health record systems for the provision of care to newborns in a spectrum of settings including the delivery room, all levels of neonatal intensive care, interfacility transport, and outpatient neonatal follow-up through two years of age.[1] This document describes the background, rationale, and content for comment prior to balloting as a Draft Standard for Trial Use (DTSU).

Health Level Seven

Health Level Seven is an international standards development organization (SDO) that focuses on the electronic interchange of clinical, financial, and administrative information among independent healthcare-oriented computer systems.[2] Founded in 1987, HL7 is a not-for-profit, volunteer organization that produces the most widely used standards for healthcare interoperability with a membership that extends to more than 55 countries and includes more than 90% of the information systems vendors serving healthcare.[2-4]

HL7 is accredited by American National Standards Institute (ANSI), a private not-for-profit organization that promotes and oversees the development of consensus standards in a spectrum of industries. Standards developed and ratified by HL7 follow an open consensus process adhering to ANSI procedures. Following

input from a balance of constituents in a balloting process, normative HL7 published standards are approved by ANSI.[1, 5]

Content released by HL7 includes *reference* and *normative* document types. Reference documents contain information to clarify concepts or facilitate comprehension; this content is not subjected to the balloting process. Normative documents include content that HL7 members and constituents have formally reviewed and balloted following the HL7 procedures for Balloting Normative Documents.[3, 4] Prior to becoming an established normative standard, an earlier iteration of the standard is typically developed and balloted as a Draft Standard for Trial Use (DSTU). A DSTU provides a basis for proof of concept projects and an objective assessment of the viability of implementing the proposed standard; this trial standard is reviewed and/or renewed following a two-year period.[6] Content may also be balloted *for comment,* to obtain feedback from outside a given work group, or as *informative*, to provide detailed information regarding the interpretation or implementation of an HL7 Specification (e.g., constraining an existing international standard for use solely in the US realm). [6, 7]

While HL7 is traditionally known for developing and supporting messaging standards, the mission of HL7 extends broadly "to provide standards for interoperability that improve care delivery, optimize workflow, reduce ambiguity, and enhance knowledge transfer among a spectrum of stakeholders including healthcare providers, government agencies, the vendor community, fellow [standard development organizations] and patients."[7] To address the many facets

of its mission, HL7 has created standards in several domains including Primary Standards (e.g., Version 2 and Version 3 messaging, Clinical Document Architecture), Foundational Standards (e.g., Decision Support Services), Clinical and Administrative Domains (i.e., constrained standards for specific clinical specialties), and Electronic Health Record Profiles (i.e., functional models and profiles), in addition to implementation guides and other supportive reference documents. [4, 7]

Defining Electronic Health Record Systems (EHR-S)

Electronic Health Records (EHR) and other information technology have long been identified as a keystone for improving healthcare safety, quality, and efficiency.[8, 9] For more than two decades, the Institute of Medicine (IOM) has released a series of reports addressing fundamental role of Electronic Health Record Systems to support many facets of optimizing healthcare delivery.[9-12] The IOM report *The Computer-Based Patient Record: An Essential Technology*, first released in 1991 and updated in 1997, defined the EHR System as "[t]he set of components that form the mechanism by which patient records are created, used, stored, and retrieved."[9] In a 2003 Letter Report, *Key Capabilities of an Electronic Health Record System*, IOM modified its definition of an EHR System to include the following:

- 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; and
- support of efficient processes for health care delivery.[11]

In addition, the IOM defined a set of core delivery-related functionalities of an EHR system (Table 1.), which help provide a basis for the development of a functional statement or definition, the rationale for the functionality, and a means of testing compliance.

Core Functionalities for an Electronic Health Record System
• Health information and data
• Results management
• Order entry/management
• Decision support
• Electronic communication and connectivity
• Patient support
• Administrative processes
• Reporting & population health management

Table 1. Core Functionalities for an Electronic Health Record System (Source: *Key Capabilities of an Electronic Health Record System, Institute of Medicine;* 2003.*)*

Prior to the development of the HL7 EHR Functional Model, a standard had been created for exchanging EHR extracts by the *Committee European Normalisation* (CEN), CEN 13606.[4] This standard was highlighted in the International Organization for Standardization/Technical Committee (ISO/TC) 215 Ad Hoc Report, in which the technical committee emphasized that an EHR should serve as "a history of all thoughts, observations and decisions about the care of a

subject, and as such, it exhibits a kind of 'clinical integrity', meaning that no matter what part of if it is viewed, a complete clinical story is available."[13] While referencing the IOM and CEN 13606 EHR-S definitions, HL7 defines an EHR-S as "[a] system for recording, retrieving and manipulating information in electronic health records."[4]

EHR vs. EHR-S

Use of the term "systems" to define the scope of for electronic health record functions is an intentionally inclusive concept. Electronic Health Record Systems (EHR-S) may indicate a single clinical information system, or a "system-of-systems", which accomplish the same goal.[4, 14] The goal of the functional model is to promote a common understanding of EHR-S functions among stakeholders, vendors, developers, and users that can be used to design and evaluate such systems. The scope of recommended EHR-S functions have be defined to encompass a broad set of goals including (a) describing end user defined benefits such as patient safety, quality outcomes and cost efficiencies, (b) providing a 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-Systems, (c) establishing a standards-based method by which each realm (country) can apply these EHR functions to care settings, uses, and priorities, and (d) informing those concerned with secondary use of EHR data and national

infrastructure what functions can be expected in an EHR-S.[14]

Development of the EHR-S Functional Model

The HL7 Electronic Health Records Special Interest Group (SIG), first established in 2002, began developing a standardized functional specification for Electronic Health Records Systems (EHR-S) in 2003. In 2004, the SIG was promoted to become the Electronic Health Record Technical Committee (EHR-TC), which serves to promote the uptake of EHR implementation by standardizing the functions that may be present, based on user selection, in an EHR-S.[14]

The Department of Health and Human Services (HHS) including the Centers for Medicare and Medicaid Services (CMS) and the Assistant Secretary for Planning and Evaluation (ASPE), the Veterans Health Administration, the Health Information Management Systems Society (HIMSS), and the Robert Wood Johnson Foundation, in a private-public partnership, approached HL7 with a request to accelerate their existing work to develop a consensus standard to define the functions of an EHR-S. In response, the HL7 EHR SIG developed an EHR-S Functional Model that passed ballot as a Draft Standard for Trial Use (DSTU) in April 2004.[14, 15] The Functional Model DSTU was published and formally registered with the American National Standards Institute (ANSI) in July 2004. Following additional feedback and enhancements, the Functional Model was balloted and passed as a normative standard in 2007.[4, 15] The EHR-TC developed the functional model with the intention that unique functional profiles be developed by subject matter experts in

various care settings to inform developers, purchasers, and other stakeholders of the functional requirements of systems developed for these domains.[14]

EHR-S Functional Model

The HL7 EHR-System Functional Model provides a reference list of functions - described from the user perspective - that may be present in EHR Systems.[14] The Functional Model organizes the common set of functions in an established framework or outline divided into three sections: Direct Care, Supportive, and Information Infrastructure (Figure 1.).

Direct Care	Functions employed in the provision of care to individual patients. Direct care functions are the subset of functions that enable delivery of healthcare or offer clinical decision support.
Supportive Functions	Functions that support the delivery and optimization of care, but generally do not impact the direct care of an individual patient. These functions assist with the administrative and financial requirements associated with the delivery of healthcare, provide support for medical research and public health, and improve the global quality of healthcare.
Information Infrastructure	Functions that define the heuristics of a system necessary for reliable, secure and interoperable computing. These functions are not involved in the provision of healthcare, but are necessary to ensure that the EHR system provides safeguards for patient safety, privacy and information security, as well as operational efficiencies and minimum standards for interoperability. Functions may be provided by the EHR system itself, by the supporting infrastructure, or a combination of both.

Figure 1. Functional outline for the EHR-S. (Adapted from the *HL7 EHR-S Functional Model, Release 1*; 2004)

Direct Care functions are used for the provision of care to one or more patient. Supportive functions frequently use EHR data to support management of healthcare services and organizations. Information Infrastructure encompasses the critical backbone elements of security, privacy, interoperability, registry, and vocabulary.[4]

Normative Language and Nomenclature

In order to the differentiate among the levels of conformance for each described function (i.e., required vs. optional features), the functional requirements use an established set of key words SHALL, MUST, SHOULD, RECOMMENDED, and MAY to be interpreted as described in Request for Comments (RFC) 2119: [16]

- SHALL – indicates a mandatory, required action. Synonymous with 'is required'.
- MUST – equivalent to 'SHALL'.
- SHOULD – indicates an optional, recommended action that is particularly suitable, without mentioning or excluding other actions. Synonymous with 'is permitted and recommended'.
- RECOMMENDED – equivalent to 'SHOULD'.
- MAY – indicates an optional, permissible action. Synonymous with 'is permitted'.

A conformance clause defines the minimum requirements for *functional profiles* to claim conformance to the EHR Functional Model. An EHR system does not conform directly to a Functional Model, but instead it claims conformance to one or more functional profiles. [14, 17]

Additionally, there exists a standardized nomenclature to precisely describe the functions of a system. The EHR Function Model established a nomenclature hierarchy (Figure 2.), providing terms to indicate a specific function or set of functions. The term "capture" includes data entry occurring directly (create) and indirectly (input devices). Similarly, "maintain" encompasses the functions of reading, updating, and removing entries. "Manage" includes any and all functions under the terms "capture" and "maintain" (Figure 2.).[14, 17]

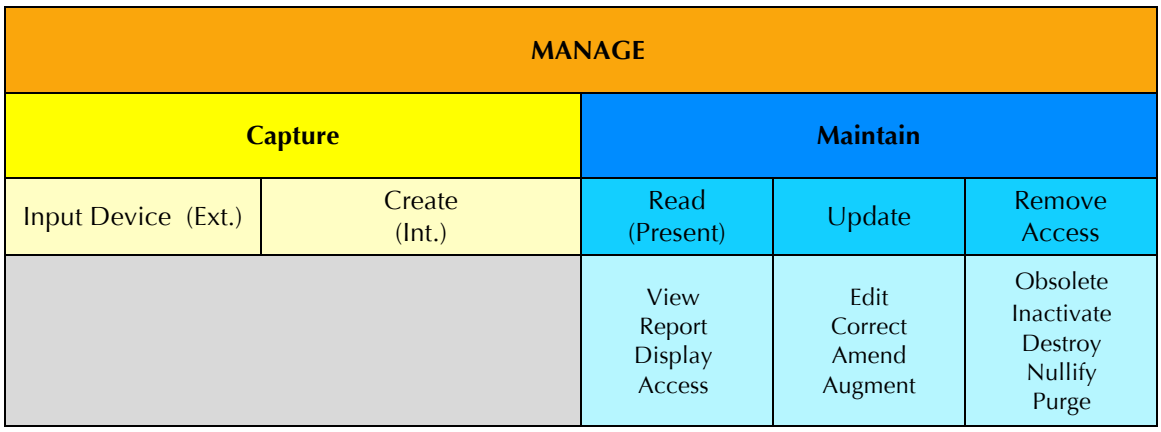

Figure 2. Nomenclature hierarchy for system functions. (Adapted from the *HL7 EHR Functional Model, Release 1;* 2004.)

To describe the roles of users interacting with the EHR systems, a common nomenclature has been developed by the HL7 EHR Technical Committee (Figure 3). All those actors using the EHR system(s) may be referenced as "users," while those providing patient care may be termed "providers" as a subset of users. Similarly, the phrase "licensed prescribers" references the subset of providers who may enter orders (e.g., medications) within the computerized provider order entry system.[17]

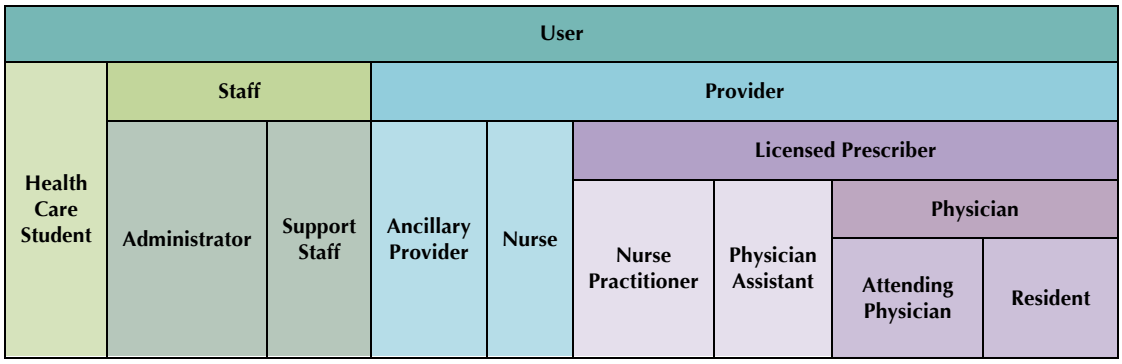

Figure 3. Nomenclature for the EHR actors/users. (Modified from the *HL7 EHR-S Child Health Functional Profile, Release 1.0*; 2008.)

EHR Functional Profile

While the EHR-S Functional Model provides a list of functional names and statements, it is not anticipated that the full Functional Model will apply to any

single EHR-S implementation. The “functional profile" is intended to provide a selected set of functions that are applicable for a particular purpose, user, care setting, or domain. [4] Functional profiles help to manage the master list of functions. It is intended that an EHR system will not conform directly to the Functional Model, but rather conforms to a functional profile (or profiles). The functional profiles represent usable subsets of functions from the EHR-S Functional Model. The functional profile scope encompasses all relevant features within the functional outline (Figure 4.).

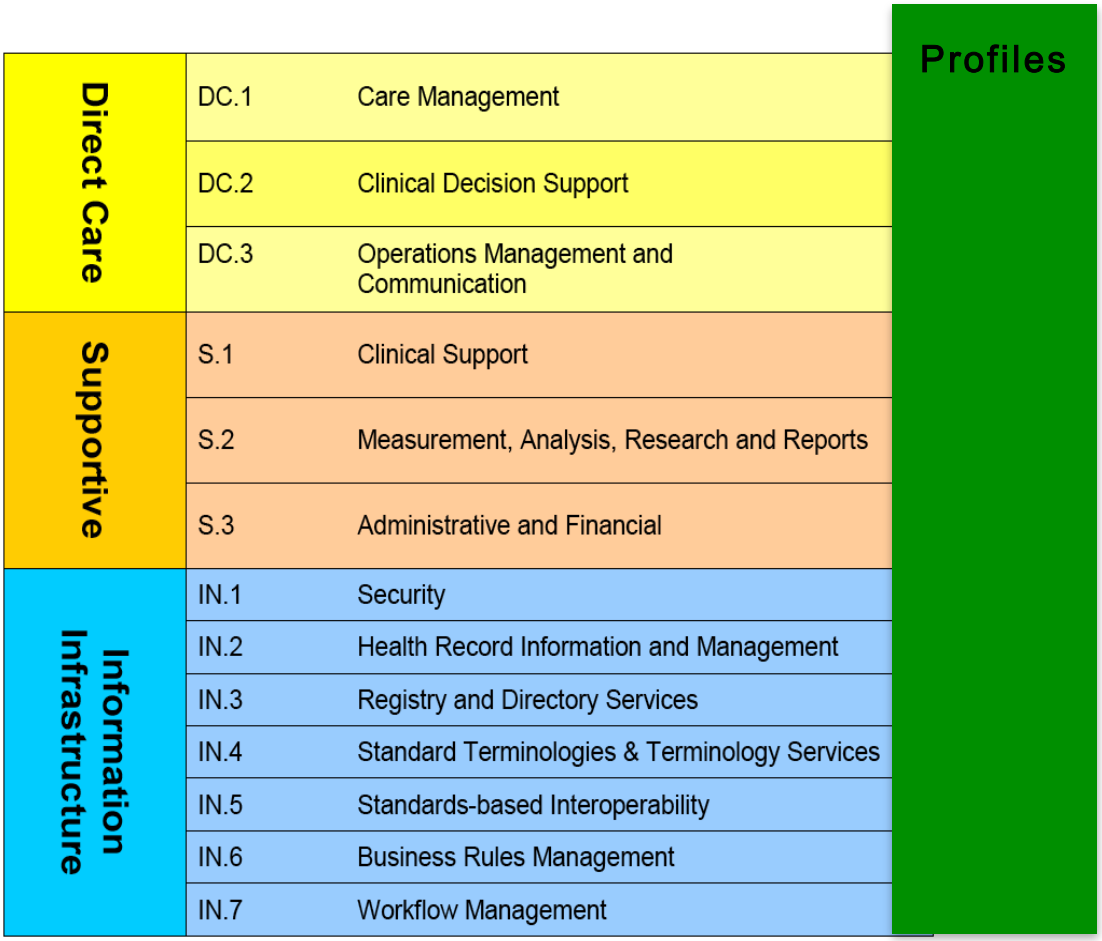

Figure 4. The EHR-S Functional Profile encompasses the complete EHR-S Functional Outline. (Modified from *HL7 EHR-S Functional Model, Release 1.0*; 2004.)

Child Health Functional Profile

The Child Health Functional Profile (Child Health-FP) is a functional profile released as a DSTU in 2008. It incorporates selected functions of the EHR-S Functional Model as well as novel functions. The scope of the Child Health-FP includes EHR system functions necessary to care for children 0-18 years of age receiving routine wellness and preventive, acute illness, or acute trauma care in (a) the newborn nursery, (b) the primary care provider's office, (c) the emergency department or urgent care clinic, and (d) in the inpatient hospital setting. Functions specific to remaining pediatric domains – such as neonatal and cardiac intensive care, oncology, or transplant patients – were excluded from scope. Major areas of emphasis in the Child Health-FP included immunization management, growth tracking, medication dosing (specifically weight-based dosing), data norms, and privacy. [17]

Neonatal Functional Profile

As a derived functional profile, the Neonatology Functional Profile includes all functions of the Child Health-FP. Many additional functions have been added, and some of the conformance requirements for existing Child Health-FP have been made more rigorous, *i.e.*, some functions which where were merely recommended (signified by a SHOULD clause) in the Child Health-FP have been made mandatory (signified by a SHALL clause). It is important to note that any derived profile must also be able to claim conformance its parent profile, therefore, no requirements in

the Child Health-FP may be relaxed for the Neonatal Functional Profile, even if the function may seem irrelevant to the care of neonates.

At the time of the inception and release of the Child Health-FP, the Child Health Work Group acknowledged that more detailed functional requirements were needed for support of care of neonates and infants receiving intensive care:[17]

> "[W]e also recognize the value in the development of derived profiles applicable to certain subsets of EHR systems used to care of children. In fact, the workgroup strongly feels that the development of derived profiles will likely be essential to support the evaluation of systems designed to support subsets of child healthcare functions. For example, derived profiles for pediatric specialties, such as neonatology, could be developed to support certification in those niches."

The Child Health Work Group first developed a scope statement for the HL7 Child Health Neonatal Functional Profile in 2010. (Table 2.) This scope outlined content for initial resuscitation (delivery room), care within any level neonatal intensive care units, patient transport, and follow-up through the second year.[1] While the original project scope statement specifically references Level IIIC Neonatal Intensive Care Units (NICUs), to be inclusive of all NICUs as defined by the 2004 AAP statement, this same scope would include Level IV NICU per the 2012 definition.[18, 19] This scope also specifies limiting the scope to the U.S. realm, and makes a note to compare developed content with that of the AHRQ EHR Model Format for Children.[1]

"The Child Health Neonatology Profile for Electronic Health Record Systems v 1.0 (Neonatology Profile) is a project of the HL7 Child Health Work Group. It conforms to the HL7 Electronic Health Record-Systems Functional Model v 1.0 (EHR-S FM) and the HL7 Child Health Functional Profile for EHR-Systems v 1.0 (Child Health Profile). This first iteration is aimed at developing functional data standards and related conformance criteria for EHR systems that are used in providing medical care in hospital-based neonatal intensive care units (NICUs) in the United States for newborn infants, especially those who are ill or premature.

Specifically, the Neonatology Profile describes functionality necessary for a U.S. neonatologist to provide care to newborns in the

(1) delivery room,
(2) neonatal intensive care unit (including level [IV] ICUs)*,
(3) outpatient follow-up of NICU graduates through their second birthday, and
(4) during transport to other care facilities.

It does not necessarily include functions necessary to provide subspecialty or surgical care in these environments, except as required by the neonatologist's participation in those activities.

However, the project will explore including functions to support ophthalmology follow-up after discharge for preterm infants, which is very time sensitive.

The project team will review industry resources that may aid in writing functional requirements, such as work coming out of the EHR Model Format for Children Project."

Table 2. *The HL7 Child Health Neonatology Functional Profile for EHR-Systems version 1.0 Scope Statement* (Source: *HL7.org,* see *Appendix I.*)
** Note: Levels of Neonatal Care have been revised since the original Neonatology Functional Profile scope statement. Many criteria for the former Level III designation from 2004 are now included in the Level IV designation in the 2012 AAP statement. The intent of the original scope statement was to denote that all levels of neonatal ICU care are included.*

Special Considerations for the Neonatal Functional Profile

"Medical care within neonatal intensive care units is a complex adaptive system."
-Frank H. Morris Jr. MD, MPH from *Adverse Medical Events in the NICU: Epidemiology and Prevention (2008)[20]*

Neonatal intensive care requires a unique set of EHR-S functions to support distinct data management needs.[21-26] In 2007, Spooner and the American Academy of Pediatrics (AAP) Council on Clinical Information Technology highlighted EHR requirements to supporting neonatal and pediatric care.[27] Among the many outlined functions to support the care of neonates were support for appropriate data precision (e.g., to the gram for weight of infants) and options for recognizing and supporting functions concepts of perinatal age: "chronologic age (expressed simply as the time since birth) is insufficient for medication-prescribing decision support, normative ranges for laboratory data, normative definitions for physical examination findings, and guideline-application support." The age terminology - gestational age, chronologic age, postmenstrual age, and corrected age – "represent distinct and important ways to present age of a neonate."[27] The Neonatology Functional Profile was updated to reflect the terminology as outlines in the 2004 AAP Policy Statement on *Age Terminology in the Perinatal Period*. (Figure 5.)[28]

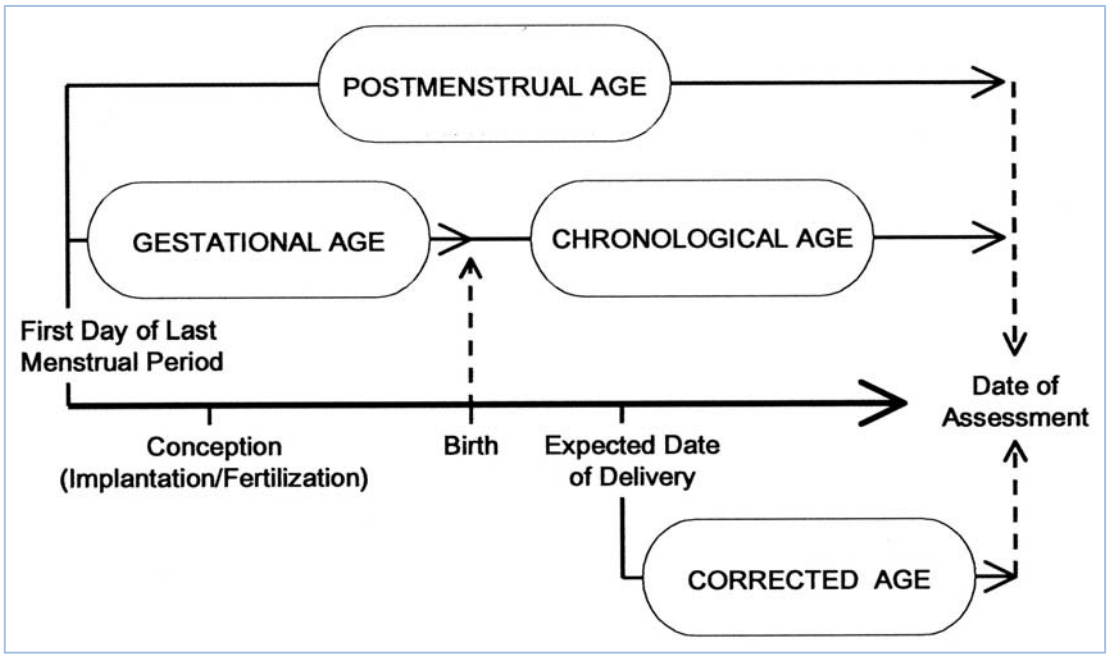

Figure 5. Age terminology during the perinatal period. (Source: *Pediatrics*; 2004)[28]

Thought the profile, opportunities for alignment with existing public health reporting guidelines, such as Integrating the Healthcare Enterprise (IHE) profiles on Patient Care Coordination (PCC) and Quality, Research & Public Health (QRPH), were identified.[29-33] While immediate benefit may not be easily apparent from implementing profiles like IHE QRPH Newborn Admission Notification Information (NANI), it is anticipated that functions covered by NANI will be leveraged to support reporting regarding immunization programs, critical congenital heart disease, newborn (bloodspot) screening, and/or communicable diseases.[31] Hearing screening is a requirement for all newborn infants in the U.S., and infants requiring intensive care for are at increased risk for hearing loss if receiving specific therapies (e.g, assisted ventilation, exchange transfusion, ototoxic medications) or simply if their NICU stay is more than 5 days.[32, 34-38] Infants receiving ECMO

are at risk for delayed-onset and progressive sensorineural hearing loss.[39] It is important to leverage the established infrastructure supporting screening, referrals, and follow-up particularly as it relates to infants in this high-risk cohort.

The Fetus as a Patient

Advances in fetal diagnosis techniques including fetal magnetic resonance imaging (MRI) and high resolution genetic testing, have enabled a growing cohort of patients to be identified prior to delivery.[40-42] There are a subset of antenatally diagnosed conditions, for which optimal care requires immediate intervention at the time of delivery. Conditions which can affect the airway including Congenital High Airway Obstruction Syndrome (CHAOS), cervical masses, micrognathia, may require medications for sedation and paralysis in order establish an initial airway during the initial resuscitation in the delivery room.[41, 43] Neonates with antenatally diagnosis with ductal dependent congenital heart disease require initiation of prostaglandin E1 soon after birth.[42] Some infants with sacrococcygeal teratomas are predisposed to high cardiac output failure that is exacerbated by the physiologic transition to *ex utero* life and, thus, require physiologic support and immediate resection of these lesions contiguous with their initial delivery room resuscitation.[41, 44] Prior to delivery, anticipated blood products, vasopressor infusions, and analgesic medications need to be prepared by the blood bank and pharmacy. However, in such situations, the identified patient may not yet have an assigned weight, gender, name, medical record number, or birth date, as they are not yet born; almost all of these elements are common

typically required fields for registering a patient in the EHR system. A commonly employed *workaround* to this situation, involves ordering the blood products and medications under the *mother's* name and medical record, but such practice violates most of the five rights of medication administration and has the potential to lead to serious adverse events (e.g., the infant receives blood intended for the mother or *vice verse*, as blood is also typically ordered for the mother undergoing a C-section). [45, 46]

To support this circumstance, the EHR-S should have the capacity to establish a temporary record identifying the fetus so that orders may be placed prior to delivery of the anticipated patient. This record needs to be linked to but distinct from the record of mother, as the ordered medications, blood products, etc… are never intended for maternal administration. This presents a unique and challenging circumstance, however, as elements as rudimentary as a date of birth and gender may not yet be known for the anticipated patient and thus must be reconciled once such information is determined.

With the advent of fetal surgery for conditions such as myelomeningoceles or thoracoamniotic shunt placement for antenatally diagnosed lung lesions, it is now possible for an infant to have received surgical procedures prior to their birth.[40, 41] For this scenario, the record of the surgery for a fetal patient should be contained in the maternal pregnancy history, but should be also accessible via record of any liveborn infant after delivery. A distinct record for a fetus is also

important in cases multiple gestation and when an fetal intervention is performed on one or more of the fetuses.

Extracorporeal Membrane Oxygenation (ECMO)

Extracorporeal membrane oxygenation (ECMO) is a modified heart–lung machine and a membrane oxygenator that provides cardiopulmonary support for infants with reversible pulmonary and/or cardiac failure in whom maximal conventional therapies have failed. [47] To perform ECMO, cannulae are inserted to the major blood vessels of the neck, and a patient's entire blood volume is pumped into an external circuit primed with blood products and medications, including heparin and calcium.[47-49] These prescribed blood products and medications are intended for the ECMO circuit associated with a given patient, but should not be restricted to the same clinical decision support system rules for weight-based dosing. Appropriate dosing of heparin for the ECMO circuit, which requires anticoagulation, would be considered an overdose (i.e., to high a dose for the patient's weight) if the EHR system makes no differentiation between orders for a patient and the patient's ECMO circuit. (Similar circumstances may exist for dialysis patients.) This functional requirement is more likely to be needed in the neonatal intensive care unit setting than other care settings because of the relative size (weight) of such infants as compared with the volume (size) of the ECMO circuit, and because

ECMO is a more commonly effective therapy among neonates and infants than older children and adults.[49]

Methods

The HL7 Child Health Neonatology Functional Profile for EHR Systems was created as a derived profile, inheriting all the conformance criteria of the HL7 EHR Child Health Functional Profile, Release 1. Stakeholders from both academics and industry with collective expertise in neonatology, pediatrics, and informatics provided serial input throughout development of the project. The initial project scope statement was approved at the HL7 Child Health Working Group Meeting in January 2010. Content was added and reviewed independently and collectively via a series of conference calls and an additional face-to-face meeting during the HL7 26th Annual Plenary & Working Group Meeting in September 2012.

With an eye forward on the potential convergence with existing standards, references to relevant content were established with existing policy statements by the American Academy of Pediatrics (AAP), Integrating the Healthcare Enterprise (IHE) profiles on Patient Care Coordination (PCC) and Quality, Research & Public Health (QRPH), and guidelines from the Centers for Disease Control and U.S. Preventive Services Task Force.[3, 29-34]

For the purposes of future harmonization, notation was made with the Agency for Health Research and Quality (AHRQ) Model Children's Electronic Health Record Format.[50] In addition, functions with relevance to Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition (i.e., "Meaningful Use").[51-53]

Given the lack of an established timeline for the implantation of this functional profile, assigning prioritization (i.e., essential/now, essential/future, optional, not applicable) was deferred until such designation more applicable.

Results

Novel functional content was developed describing maternal record elements relevant to the infant, capturing vital signs and episodic events, screening and decision support, nutrition, respiratory support, and management of unique circumstances for the registration of an anticipated patient (i.e., a fetus with an antenatal diagnosis) and medication administration. Terminology was updated to reflect currently published policy statements by the American Academy of Pediatrics. Relevance to the Agency for Health Research and Quality (AHRQ) Model Children's Electronic Health Record Format and the Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition (*i.e.,* "Meaningful Use") was also noted for future harmonization efforts.

[Refer to Appendix II for the pre-ballot content of the *Health Level Seven Child Health Neonatology Profile for Electronic Health Record Systems, version 1.0*]

Conclusion

The HL7 Child Health Neonatology Functional Profile for EHR Systems provides a detailed reference for unique and recommended content for the provision of care of neonates and infants in the intensive care setting that has been generated by a range of stakeholders with expertise in neonatology and informatics domains. This work may be leveraged by as a proposed pre-ballot DSTU for future HL7 balloting following the format of a derived functional profile, or as a tool for the clarification and harmonization of related electronic health record functions, such as the creation of the HL7 Child Health EHR-S Functional Profile, version 2, and/or harmonization with the Agency for Health Research and Quality (AHRQ) Model Children's Electronic Health Record Format.

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Appendix I.

HL7 Child Health Neonatology Profile for EHR Systems, v 1.0
Project Scope Statement

Health Level Seven®, Inc.

Project Scope Statement

1. Project Name, ID and Products

HL7 Child Health Neonatology Profile for EHR Systems, v 1.0	Project ID:

☐ Non Product Project- (Educ. Marketing, Elec. Services, etc.)	☐ V3 Documents - Knowledge
☐ Arden Syntax	☐ V3 Foundation – RIM
☐ Clinical Context Object Workgroup (CCOW)	☐ V3 Foundation – Vocab Domains & Value Sets
☐ Domain Analysis Model (DAM)	☐ V3 Messages - Administrative
☒ Electronic Health Record (EHR)	☐ V3 Messages - Clinical
☐ V2 Messages – Administrative	☐ V3 Messages - Departmental
☐ V2 Messages - Clinical	☐ V3 Messages - Infrastructure
☐ V2 Messages - Departmental	☐ V3 Rules - GELLO
☐ V2 Messages – Infrastructure	☐ V3 Services – Java Services (ITS Work Group)
☐ V3 Documents – Administrative (e.g. SPL)	☐ V3 Services – Web Services
☐ V3 Documents – Clinical (e.g. CDA)	☐ - New Product Definition -

2. Project Intent

☒ Create new standard	☐ Reaffirmation of a standard
☐ Revise current standard	☐ Withdraw current standard
☐ Supplement to a current standard	☐ N/A (Project not directly related to an HL7 Standard)
☐ Implementation Guide will be created/modified	

2.a. Ballot Type

☐ Comment Only	☐ Normative
☐ Informative	☐ Joint Ballot (with other SDOs or HL7 Work Groups)
☒ DSTU	☐ N/A (project won't go through ballot)

2.b. Public Document

☐ Public Document(s) to be created?

3. Sponsoring Group(s) / Project Team

Primary Sponsor/Work Group (**1 Mandatory**)	**Child Health Work Group**
Co-sponsor Work Group(s)	EHR Work Group (need to confirm)
Project Team:	
Project facilitator (**1 Mandatory**)	Joy Kuhl, joy@optimalaccords.com Andy Spooner, MD, andrew.spooner@cchmc.org
Other interested parties	
Multi-disciplinary project team (recommended)	
Modeling facilitator	n/a
Publishing facilitator	Joy Kuhl, joy@optimalaccords.com
Vocabulary facilitator	n/a
Domain expert rep	Chris Longhurst, MD, clonghurst@lpch.org Jeff Horbar, horbar@vtoxford.org Joe Carpenter, jcarpenter@vtoxford.org Christoph Lehmann, MD, clehmann@jhmi.edu Mike Padula, MD, Padula, padula@email.chop.edu Gay Giannone, RN, gay.giannone@lantanagroup.com
Data Analyst facilitator	n/a
Business requirement analyst	n/a
Requirements process facilitator	n/a

Implementers (**2 Mandatory** for DSTU projects):
1) Cincinnati Children's Hospital Medical Center
2) Children's Hospital of Philadelphia
3) St. Louis Children's

4. Project Definition

4.a. Project Scope

The Child Health Neonatology Profile for Electronic Health Record Systems v 1.0 (Neonatology Profile) is a project of the HL7 Child Health Work Group. It conforms to the HL7 Electronic Health Record-Systems Functional Model v 1.0 (EHR-S FM) and the HL7 Child Health Functional Profile for EHR-Systems v 1.0 (Child Health Profile). This first iteration is aimed at developing functional data standards and related conformance criteria for EHR systems that are used in providing medical care in hospital-based neonatal intensive care units (NICUs) in the United States for newborn infants, especially those who are ill or premature.

Specifically, the Neonatology Profile describes functionality necessary for a U.S. neonatologist to provide care to newborns in the (1) delivery room, (2) neonatal intensive care unit (including level III ICUs,(3) outpatient follow-up of NICU graduates through their second birthday, and (4) during transport to other care facilities.

It does not necessarily include functions necessary to provide subspecialty or surgical care in these environments, except as required by the neonatologist's participation in those activities.

However, the project will explore including functions to support ophthalmology follow-up after discharge for preterm infants, which is very time sensitive.

The project team will review industry resources that may aid in writing functional requirements, such as work coming out of the EHR Model Format for Children Project.

4.b. Project Need

The HL7 functional standards for EHR systems do not currently provide guidance for those who use EHRs for neonatology. The intent is to assist all childcare providers and associated IT vendors in ensuring safe, effective and reliable neonatology care through the safe and effective use of information technology.

4.c. Success Criteria

Set of neonatology functional requirements for EHR systems and related conformance criteria published through HL7 as a normative standard and available to providers and vendors.

4.d. Project Objectives / Deliverables / Target Dates

*this scenario is working toward July 2011 ballot; another option is March 2011 or Sept 2011 depending on the pace of work

Project team identified	January 2011
Child Health approval of project scope statement	January 2011
HL7 approval of project scope statement	February 2011
Develop content (WGM is May 15-20)	February – June 2011
Intent to ballot due	June 19, 2011
Preparation of ballot documents, initial content due	June 26, 2011
Ballot submission, final content due	July 3, 2011
Ballot reconciliation	July 10 – July 16, 2011
Profile published	August 2011

4.e. Project Dependencies

While there are no dependencies for this project, it is understood that efforts are underway within the HL7 EHR Work Group to publish a Release 2 of the EHR FM. Upon completion of the EHR FM R2, we may want to begin work on R2 of the Neonatology Profile.

4.f. Project Document Repository Location

Work Group's web page on www.hl7.org and HL7 Project Insight.

4.g. Backwards Compatibility

Are the items being produced by this project backward compatible?	☐ Yes	☐ No	☐ Don't Know	☒ N/A

5. Project Approval Dates

Sponsoring Group Approval Date	Work Group Approval Date Here
Steering Division Approval Date	SD Approval Date Here
Technical Steering Committee Approval Date	TSC Approval Date Here

6. External Project Collaboration

The Child Health Work Group and this project receive strong support from the Alliance for Pediatric Quality – a collaboration of four major organizations in the United States. This includes the American Academy of Pediatrics, The American Board of Pediatrics, Child Health Corporation of America and the National Association of Children's Hospitals and Related Institutions.

6.a. Stakeholders / Vendors / Providers

Stakeholders	Vendors	Providers
☐ Clinical and Public Health Laboratories	☐ Pharmaceutical	☐ Clinical and Public Health Laboratories
☐ Immunization Registries	☒ EHR, PHR	☐ Emergency Services
☐ Quality Reporting Agencies	☐ Equipment	☐ Local and State Departments of Health
☐ Regulatory Agency	☐ Health Care IT	☐ Medical Imaging Service
☒ Standards Development Organizations (SDOs)	☒ Clinical Decision Support Systems	☒ Healthcare Institutions (hospitals, long term care, home care, mental health)
☐ Payors	☐ Lab	☐ Other (specify in text box below)
☐ Other (specify in text box below)	☐ HIS	☐ N/A
☐ N/A	☐ Other (specify below)	
	☐ N/A	

Other: Indicate other stakeholders, vendors or providers not listed above.

7. Realm

☐ Universal	☒ Realm Specific (**U.S.**)

8. Roadmap Reference

Check which Roadmap Strategy best relates to your project.

- ☒ A. Lead the development of global technical and functional health informatics standards.
- ☐ B. Streamline the HL7 standards development process.
- ☐ C. Facilitate HL7 standards adoption and implementation.
- ☐ D. Define an overarching and internally consistent interoperability framework.
- ☒ E. Ensure broad and encompassing stakeholder engagement in the standards development process.
- ☐ F. Align HL7's business and revenue models to be responsive to national bodies while supporting global standards development.
- ☐ G. None of the above apply to this project.

Appendix II.

Health Level Seven Child Health Neonatology Profile for Electronic Health Record Systems, version 1.0

Example/Key:

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
DC.1.4.2	**F**	Manage Medication List	**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. All pertinent dates, including medication start, modification, and end dates are stored…	S.2.2.1	1.The system **SHALL** provide the ability to capture patient-specific medication lists.	1	

1. **ID#** (Function ID): This is the unique outline identification of a function in the outline.
    a. Direct Care functions are identified by 'DC' followed by a number (Example DC.1.1.3.1; DC.1.1.3.2).
    b. Supportive functions are identified by an' S' followed by a number (Example S.2.1; S.2.1.1).
    c. Information Infrastructure functions are identified by an 'IN' followed by a number (Example IN.1.1; IN.1.2).
    d. Numbering for all sections begins at n.1.
2. **Type** (Function Type): Indication of the line item as being a header (H) or function (F).
3. **Name** (Function Name): The name of the Function. Example: Manage Medication List
4. **Statement:** Brief statement of the purpose of this function. Example: Create and maintain patient-specific medication lists.
   Description: Detailed description of the function, including examples if needed.
5. **See Also**: Identifies relationships between functions within this profile.
6. **Conformance Criteria**: Clarifies how conformance to a given function may be viewed.
7. **Original Row #**: Original Row number from the EHR-S Functional Model)
8. **Reference/Comment**: Includes references to policy statements, guidelines, alignment with the AHRQ Model Children's Electronic Health Record Format, "Meaningful use"

New/modified content for the Neonatology Functional Profile is highlighted in pink for ease of identifying added material.

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
DC.1	H	Care Management	**Description:** Care Management functions (i.e. DC.1.x functions) are those directly used by providers as they deliver patient care and create an electronic health record. DC.1.1.x functions address the mechanics of creating a health record and concepts such as a single logical health record, managing patient demographics, and managing externally generated (including patient originated) health data. Thereafter, functions DC.1.2.x through DC.1.9.x follow a fairly typical flow of patient care activities and corresponding data, starting with managing the patient history and progressing through consents, assessments, care plans, orders, results etc. Integral to these care management activities is an underlying system foundation that maintains the privacy, security, and integrity of the captured health information – the information infrastructure of the EHR-S. Throughout the DC functions, conformance criteria formalize the relationships to Information Infrastructure functions. Criteria that apply to all DC.1 functions are listed in this header (see Conformance Clause page six for discussion of "inherited" conformance criteria). In the Direct Care 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 (e.g. guardian, surrogate).	IN.1.5 IN.1.6 IN.1.7 IN.1.8 IN.2.1 IN.2.2 IN.4.2 IN.4.3 IN.5.1	1. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	1	
					2. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	2	
					3. The system **SHALL** conform to function IN.1.3 (Entity Access Control).	3	
					4. IF the system is used to enter, modify or exchange data, THEN the system **SHALL** conform to function IN.1.5 (Non-Repudiation), to guarantee that the sources and receivers of data cannot deny that they entered/sent/received the data.	4	
					5. IF the system exchanges data outside of a secure network, THEN the system **SHALL** conform to Function IN.1.6 (Secure Data Exchange), to ensure that the data are protected.	5	
					6. IF the system exchanges data outside of a secure network, THEN the system **SHALL** conform to Function IN.1.7 (Secure Data Routing), to ensure that the exchange occurs only among authorized senders and receivers.	6	
					7. IF the system is used to enter or modify data in the health record, THEN the system **SHALL** conform to function IN.1.8 (Information Attestation), to show authorship and responsibility for the data.	7	
					8. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	8	
					9. The system **SHALL** conform to function IN.2.1 (Data Retention, Availability and Destruction).	9	
					10. The system **SHOULD** conform to function IN.2.3 (Synchronization).	10	
					11. IF the system is used to extract data for analysis and reporting, THEN the system **SHALL** conform to function IN.2.4 (Extraction of Health Record Information), to support data extraction across the complete health record of an individual.	11	
					12. IF the system stores unstructured data, THEN the system **SHALL** conform to function IN.2.5.1 (Manage Unstructured Health Record Information), to ensure data integrity through all changes.	12	
					13. IF the system stores structured data, THEN the system **SHALL** conform to function IN.2.5.2 (Manage Structured Health Record Information), to ensure data integrity through all changes.	13	
					14. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	14	
					15. IF the system processes data for which generally accepted standard terminologies have been established, THEN the system **SHALL** conform to function IN.4.1 (Standard Terminologies and Terminology Models), to support semantic interoperability.	15	
					16. IF the system processes data for which generally accepted standard terminologies have been established, THEN the system **SHALL** conform to function IN.4.2 (Maintenance and Versioning of Standard Terminologies), to preserve the semantics of coded data over time.	16	
					17. The system **SHOULD** conform to function IN.4.3 (Terminology Mapping).	17	
					18. IF the system exchanges data for which generally accepted interchange standards have been established, THEN the system **SHALL** conform to function IN.5.1 (Interchange Standards), to support interoperability.	18	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					19. IF the system exchanges data for which generally accepted interchange standards have been established, THEN the system **SHALL** conform to function IN.5.2 (Interchange Standards Versioning and Maintenance), to accommodate the inevitable evolution of interchange standards.	19	
					20. The system **SHOULD** conform to function IN.5.3 (Standards-based Application Integration).	20	
					21. IF the system exchanges data with other systems outside itself, THEN the system **SHALL** conform to function IN.5.4 (Interchange Agreements), to define how the sender and receiver will exchange data.	21	
					22. The system **SHOULD** conform to function IN.6 (Business Rules Management).	22	
					23. The system **SHOULD** conform to function IN.7 (Workflow Management).	23	
					24. The system **SHALL** conform to function S.2.2.1 (Health Record Output).	24	
DC.1.1	**H**	Record Management	**Description**: For those functions related to data capture, data may be captured using standardized code sets or nomenclature, depending on the nature of the data, or captured as unstructured data. Care-setting dependent data is entered by a variety of caregivers. Details of who entered data and when it was captured should be tracked. Data may also be captured from devices or other tele-health applications.	S.3.1.4		25	
DC.1.1.1	**F**	Identify and Maintain a Patient Record	**Statement**: Identify and maintain a single patient record for each patient.	S.1.4.1	1. The system **SHALL** create a single logical record for each patient.	26	
				S.2.2.1	2. The system **SHALL** provide the ability to create a record for a patient when the identity of the patient is unknown.	27	
					3. IF in the scope of practice, THEN the system **SHALL** provide the abilty to create a temporary record for a fetus prior to anticipated delivery to permit ordering (e.g., medications or blood products) prior to birth. This record **SHALL** be reconciled with a permament record if a liveborn infant is delivered.		Needed context to prevent the workaround of ordering these items under the records mother when they are solely intended for the infant.
					4. The system **SHALL** provde the abilty to link the of a a patient (infant) to the record of the patient's mother, if in the same system.		Includes linking infants of the same gestation to the same mother and pregancy episode.

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.	S.3.1.2	5. The system **SHALL** provide the ability to store more than one identifier for each patient record.	28	
				S.3.1.5	6. The system **SHALL** associate key identifier information (e.g., system ID, medical record number) with each patient record.	29	
				IN.2.1	7. The system **SHALL** provide the ability to uniquely identify a patient and tie the record to a single patient.	30	
				IN.2.3	8. The system **SHALL** provide the ability, through a controlled method, to merge or link dispersed information for an individual patient upon recognizing the identity of the patient.	31	
					7. IF health information has been mistakenly associated with a patient, THEN the system **SHALL** provide the ability to mark the information as erroneous in the record of the patient in which it was mistakenly associated and represent that information as erroneous in all outputs containing that information.	32	
					8. IF health information has been mistakenly associated with a patient, THEN the system **SHALL** provide the ability to associate it with the correct patient.	33	
					9. The system **SHALL** provide the ability to retrieve parts of a patient record using a primary identifier, secondary identifiers, or other information which are not identifiers, but could be used to help identify the patient.	34	
					10. The system **SHOULD** provide the ability to obsolete, inactivate, nullify, destroy and archive a patient's record in accordance with local policies and procedures, as well as applicable laws and regulations.	35	
					11. IF related patients register with any identical data, THEN the system **SHOULD** provide the ability to propagate that data to all their records.	36	
					12. The system **SHALL** conform to function IN.2.2 (Auditable Records).	37	
					13. The system **SHALL** provide the ability to find patient records based on previous names.		
DC.1.1.2	**F**	Manage Patient Demographics	**Statement**: Capture and maintain demographic information. Where appropriate, the data should be clinically relevant and reportable.	S.1.4.1	1. The system **SHALL** capture demographic information as part of the patient record.	38	
				S.2.2.2	2. The system **SHALL** store and retrieve demographic information as discrete data.	39	
			Description: Contact information including addresses and phone numbers, as well as key demographic information such as date of birth, time of birth, gestation, gender, and other information is stored and maintained for unique patient identification, reporting purposes and for the provision of care. Patient demographics are captured and maintained as discrete fields (e.g., patient names and addresses) and may be enumerated, numeric or codified. Key patient identifiers are shown on all patient information output (such as name and ID# on each screen of a patient's record). The system will track who updates demographic information, and when the demographic information is updated.	IN.2.2	3. The system **SHALL** provide the ability to retrieve demographic data as part of the patient record.	40	
				IN.2.4	4. The system **SHALL** provide the ability to update demographic data.	41	
					5. The system **SHALL** provide the ability to report demographic data.	42	
					6. The system **SHALL** store historical values of demographic data over time.	43	
					7. The system **SHALL** present a set of patient identifying information at each interaction with the patient record.	44	
					8. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	45	
					9. The system **SHALL** conform to function IN.2.2 (Auditable Records).	46	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					10. The system **SHALL** capture time of birth: a SHALL be precise to the day, b. SHOULD be precise to the minute, c. MAY be precise to the second, d. If more precise than day, SHOULD include time-zone offset.		MODIFIED. Consistent with Meaningful Use Stage 2 - Consolidated CDA (Conformance statements 10078, 10079, 10080, 10081). http://www.hl7.org/implement/standards/product_brief.cfm?product_id=258
					11. The system **SHALL** provide the ability to indicate that a patient's gender is unknown.		Note that identification of administrative sex and administrative gender within HL7 is a point of hamonization between HL7 V2 messaging and the V3 Reference Infromation Model (RIM) in 2012. The Neonatology Functional Profile should support the harmonized standard.
					12. The system **SHALL** provde the abilty to indicate that a patient's gender is undetermined.		Defer to harmonized standard; should accomidate the use case of ambiguous genitalia.
					13. The system **SHALL** provide the ability to compute post menstrual age (PMA) and the corrected age. .		MODIFIED. Updated to reflect AAP approved terminology. http://pediatrics.aappublications.org/content/114/5/1362.full
DC.1.1.3	**H**	Data and Documentation from External Sources	**Description**: External sources are those outside the EHR system, including clinical, administrative, and financial information systems, other EHR systems, PHR systems, and data received through health information exchange networks.		1. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	47	
					2. The system **SHALL** conform to function IN.2.2 (Auditable Records).	48	
DC.1.1.3.1	**F**	Capture Data and Documentation from External Clinical Sources	**Statement**: Incorporate clinical data and documentation from external sources. **Description**: Mechanisms for incorporating external clinical data and documentation (including identification of source) such as image documents and other clinically relevant data are available. Data incorporated through these mechanisms is presented alongside locally captured documentation and notes wherever appropriate.	IN.1.5	1. The system **SHALL** provide the ability to capture external data and documentation.	49	
				IN.1.6	2. IF lab results are received through an electronic interface, THEN the system **SHALL** receive and store the data elements into the patient record.	50	
				IN.1.7	3. IF lab results are received through an electronic interface, THEN the system **SHALL** display them upon request.	51	
				IN.1.8	4. The system **SHOULD** provide the ability to receive, store and display scanned documents as images.	52	
				IN.2.1	5. The system **SHOULD** provide the ability to store imaged documents or reference the imaged documents via links to imaging systems.	53	MODIFIED. MAY changed to SHOULD.
				IN.2.2	6. The system **SHOULD** provide the ability to receive, store and present text-based externally-sourced documents and reports.	54	Should support exchange of Meaningful Use Stage 2 - Consolidated CDA. http://www.hl7.org/implement/standards/product_brief.cfm?product_id=258
				IN.4.2	7. The system **SHOULD** provide the ability to receive, store and display clinical result images (such as radiologic images) received from an external source.	55	
				IN.4.3	8. The system **SHOULD** provide the ability to receive, store and display other forms of clinical results (such as wave files of EKG tracings) received from an external source.	56	
				IN.5.1	9. The system **SHOULD** provide the ability to receive, store and present medication details from an external source.	57	MODIFIED. Should support exchange of Meaningful Use Stage 1 - CCD. http://www.hl7.org/implement/standards/product_brief.cfm?product_id=258
				IN.5.2	10. The system **SHOULD** provide the ability to receive, store and present structured text-based reports received from an external source.	58	
					11. The system **SHOULD** provide the ability to receive, store and present standards-based structured, codified data received from an external source.	59	
					12. When the maternal prenatal and perinatal record is split across more than one system (e.g. prenatal care and Labor & Delivery) and if electronic access is possible, the system **SHOULD** enable **automatic** incorporation of maternal information from each of those systems into the infant's record.		Aligned with Model Format function.

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					13.Within the infant's record the system **SHALL** clearly distinguish maternal history data from directly collected infant data.		Aligned with Model Format function.
					14. The system **SHALL** provide the ablity to receive or capture maternal demographic data including age, race, ethnicity and marital status.		Aligned with Model Format function.
					15. The system **SHALL** record maternal Gravida / Para / Abortus status / Living Children (GPAL).		Aligned with Model Format function.
					16. The system **SHALL** enable selective capture into the infant's record of the maternal problem list by the infants's healthcare provider.		Aligned with Model Format function.
					17. The system **SHALL** capture maternal blood type including Rh factor in a manner consistent with standard coding as reommended in meaningful use into the infant's chart.		Aligned with Model Format function.
					18. IF the maternal Rh factor is negative, the system should capture maternal Rho(D) Immune Globulin adminstration during pregnancy.		
					19. The system **SHALL** record maternal antibody status.		Aligned with Model Format function.
					20. The system **SHALL** record maternal Group B streptococcus (GBS) status as Positive, Negative, Unknown, or Pending.		Aligned with Model Format function.
					21. The system **SHALL** capture prophylaxis for maternal Group B streptococcus (GBS) according to current guidelines from the CDC into the infant's record.		
					22. The system **SHALL** record maternal rubella status as Immune, Non-Immune, Equivocal, or Unknown.		Aligned with Model Format function.
					23. The system **SHALL** record maternal HIV status as Positive, Negative, Unknown or Pending.		Aligned with Model Format function.
					24. The system **SHOULD** provide the date and/or pregancy trimester maternal HIV testing was performed.		Required in many states. Could use scope of practice statement and change to SHALL.
					25. IF in the scope of practice, THEN the system **SHOULD** provide the date(s) and/or pregancy trimester maternal syphylis (e.g., RPR or VDRL) testing was performed.		U.S. Preventive Services Task Force. *Screening for Syphilis Infection in Pregnancy: Reaffirmation Recommendation Statement*. AHRQ Publication No. 09-05133-EF-1, May 2009. http://www.uspreventiveservicestaskforce.org/uspstf09/syphilis/syphpgrs.htm
					26. The system **SHALL** record maternal hepatitis B status as Positive, Negative, Unknown or Pending.		Aligned with Model Format function.
					27. The system **SHALL** record maternal gonorrhea status as Positive, Negative, Unknown, or Pending.		
					28. The system **SHALL** record maternal chlamydia status as Positive, Negative, Unknown, or Pending.		
					29. IF a test of cure has been performed for positve maternal gonorrhea status, the system **SHOULD** record the date and result (e.g., successful or unsuccessful test of cure).		
					30. IF a test of cure has been performed for positve maternal chlamydia status, the system **SHOULD** record the date and result (e.g., successful or unsuccessful test of cure).		
					31. The system **SHALL** record gestational age in weeks and days based on last menstrual period (LMP), ultrasound, or maternal report.		
					32. The system **SHOULD** record the method by which gestational age (and/or estimated delivery date (EDD)) was estimated.		
					33. The system **SHALL** record pertinant maternal prenatal information having a direct impact on the process of labor and delivery.		Maps to Prenatal Events (Template ID 1.3.6.1.4.1.19376.1.5.3.X.X.X) of the IHE Labor and Delivery Profile.
					34. When the maternal prenatal and perinatal record is split across more than one system (e.g. prenatal care and Labor & Delivery) and if electronic access is possible, the system **SHOULD** enable **automatic** incorporation of maternal information from each of those systems into the infant's record.		Aligned with Model Format function.
					35. The system **SHOULD** record maternal sickle cell status as HbSS, HbSC, HbS-Thal, Negative or Unknown.		Similar to Model Format Function (except changed from SHALL to SHOULD).
					36. The system **SHALL** provide the ability to capture antenatal diagnoses (e.g., growth restriction, congenital anomalies).		
					37. The system **SHOULD** capture antenatal steroid adminstration (e.g., partial or complete courses of Betamethasone or Dexamethasone).		
					38. IF in the scope of practice, the system **SHALL** provide the ability to capture antenatal inteventions (e.g., in utero myelomeningocele surgery, throacoamniotic shunt placement, amnioreduction or laser therapy for twin-twin transfusion syndrome, periumbilical blood sampling) that affect or are performed on the fetus.		
					39. The system **SHALL** capture the mode of delivery (vaginal, c-section, etc…).		

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					40. The systems **SHOULD** provide the ability to capture data about fetal assessment or monitoring prior to birth (e.g., fetal movment, fetal heart rate, biophysical profiles).		
					41. The system **SHALL** provide the ability to capture the duration of rupture of amniotic membranes prior to delivery.		
					42. The sytem **SHALL** provide the ability to capture the description of the amniotic fluid (.g., clear, meconium-stained).		
					43. The system **SHALL** capture other maternal infections that can affect the newborn in a manner consistent with standard coding into the infant's chart.		Aligned with Model Format function.
					44. When electronic access to the mother's data is not possible, the system **SHOULD** enable incorporation of selected maternal prenatal and perinatal data by manual entry into the infant's record; such data **SHALL** be treated as patient (iInfant) history information and designated as maternal. The system **SHALL** provide abilty to capture the source of data.		Aligned with Model Format function.
					45. When electronic access to the mother's data is possible, the system **SHALL** enable incorporation of selected maternal prenatal and perinatal data into the infant's record; such data **SHALL** be treated as patient history information and designated as maternal.		Aligned with Model Format function.
					46. The system **SHALL** follow applicable state or federal privacy laws regarding the importation of maternal information into the infant's record.		Aligned with Model Format function.
					47. The system **SHALL** support copying of selected information from another chart to the infant's chart. Examples include copying from either biologic parent for genetic information, or the maternal chart for prenatal information. This copying **SHALL** support suppression of the maternal identity in cases that require parental confidentiality (e.g. voluntary surrender for adoption, or removal from the mother's care for other reasons).		
					48. The system **SHALL** provide for the linking of maternal and birth data to the infant health record for quality measures. Examples: linkage of frequency of prenatal care to birth weight.		Aligned with Model Format function.
					49. The system **SHALL** record drug screening results including drug tested and results (Positive, Negative, or Unknown).		Aligned with Model Format function.
					51. IF maternal lab results relevant to the patient (infant) are received through an electronic interface, THEN the system **SHALL** receive and store the data elements into the record of the patient (infant).		
DC.1.1.3.2	**F**	Capture Patient-Originated Data	**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 patient-originated data that is either provided or entered by a 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).	IN.1.4 IN.2.5.1 IN.2.5.2	1. The system **SHALL** capture and explicitly label patient- originated data.	60	Note: "patient originated data" includes data provided by: 1. the patient 2. a surrogate (parent, spouse, guardian) or 3. an informant (teacher, lawyer, case worker).
			An electronic health record may provide the ability for direct data entry by any of these.		2. IF the system provides the ability for direct entry by the patient, THEN the system **SHALL** explicitly label the data as patient entered.	61	
					3. The system **SHALL** capture and label the source of clinical data provided on behalf of the patient.	62	
			Patient-originated data may also be captured by devices and transmitted for inclusion into the electronic health record.		4. The system **SHALL** present patient-originated data for use by care providers.	63	
					5. The system **SHALL** provide the ability for a provider to verify the accuracy of patient-originated data for inclusion in the patient record.	64	
			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.		6. The system **SHOULD** provide the ability to view or comment, but not alter, patient-originated data.	65	
DC.1.1.3.3	**F**	Capture Patient Health Data Derived from Administrative and Financial Data and Documentation	**Statement**: Capture and explicitly label patient health data derived from administrative or financial data; and link the data source with that data.	DC.1.1.2 DC.1.2	1. The system **SHALL** provide the ability to capture and label patient health data derived from administrative or financial data.	66	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
		and Documentation	**Description**: It is critically important to be able to distinguish patient health data derived from administrative or financial data from clinically authenticated data. Sources of administrative and financial data relating to a patient's health may provide this data for entry into the health record or be given a mechanism for entering this data directly. The data must be explicitly labeled as derived from administrative or financial data, and information about the source must be linked with that data. Patient health data that is derived from administrative or financial data may be provided by: 1. the patient 2. a provider 3. a payer, or 4. entities that transmit or process administrative or financial data.	S.1.4.1			
					2. The system **SHALL** provide the ability to capture and link data about the source of patient health data derived from administrative and financial data with that patient data.	67	
			Since this data is non-clinical, it may not be authenticated for inclusion in the patient's legal health record.		3. The system **SHALL** provide the ability to present labeled patient health information derived from administrative or financial data and the source of that data for use by authorized users.	68	
					4. The system **SHOULD** provide the ability to view or comment on patient health information derived from administrative or financial data.	69	
			Registration data, which may contain demographic data and pertinent positive and negative histories, is an example of administrative and financial data that may be captured.		5. The system **SHALL** provide the ability to request correction of the administrative or financial data.	70	
DC.1.1.4	**F**	Produce a Summary Record of Care	**Statement**: Present a summarized review of a patient's comprehensive EHR, subject to jurisdictional laws and organizational policies related to privacy and confidentiality.	S.2.2.1 IN.1.9	1. The system **SHALL** present summarized views and reports of the patient's comprehensive EHR.	71	
			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 and public health reports, without additional input from clinicians.	IN.2.4	2. The system **SHALL** include at least the following in the summary: problem list, medication list, allergy and adverse reaction list, immunization history, and growth chart.	72	MODIFIED. Addressed with exchange of Meaningful Use Stage 1 - CCD. http://www.hl7.org/implement/standards/product_brief.cfm?product_id=258
				IN.2.5.1	3. The system **SHOULD** conform to function S.3.3.6 (Health Service Reports at the Conclusion of an Episode of Care).	73	
				IN.2.5.2	4. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	74	
					5. The system **SHALL** conform to function IN.2.2 (Auditable Records).	75	
DC.1.1.5	**F**	Present Ad Hoc Views of the Health Record	**Statement**: Subject to jurisdictional laws and organizational policies related to privacy and confidentiality, present customized views and summarized information from a patient's comprehensive EHR. The view may be arranged chronologically, by problem, or other parameters, and may be filtered or sorted.	S.1.8 S.2.2.3	1. The system **SHALL** provide the ability to create views that prohibit patients from accessing certain information according to organizational policy, scope of practice, and jurisdictional law.	76	
			Description: A 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, 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, or by consultant, depending on need. Jurisdictional laws and organizational policies that prohibit certain users from accessing certain patient information must be supported.	S.3.1.1 IN.1.3 IN.1.6 IN.1.7 IN.1.9 IN.2.4 IN.2.5.1			

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.2.5.2 IN.4.1 IN.4.2 IN.4.3			
				IN.5.1	2. The system **SHALL** provide the ability to create customized views of summarized information based on sort and filter controls for date or date range, problem, or other clinical parameters.	77	
				IN.5.2	3. The system **SHALL** provide the ability to access summarized information through customized views based on prioritization of chronology, problem, or other pertinent clinical parameters.	78	
				IN.5.4	4. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	79	
				IN.6	5. The system **SHALL** conform to function IN.2.2 (Auditable Records).	80	
DC.1.2	**F**	Manage Patient History	**Statement**: Capture and maintain medical, procedural/surgical, social and family history including the capture of 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, and relevant health conditions of family members is captured through such methods as patient reporting (for example 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 is captured and presented alongside locally captured documentation and notes wherever appropriate.	S.2.2.1 S.3.5 IN.1.7 IN.2.5.1 IN.2.5.2	1. The system **SHALL** provide the ability to capture, update and present current patient history including pertinent positive and negative elements.	81	
					2. The system **SHALL** provide the ability to record details of maternal pregnancy (antenatal) history, labor and delivery history, and resuscitation history.		
				IN.4.1	3. The system **SHOULD** provide the ability to capture and present previous external patient histories.	82	
				IN.4.2	4. The system **SHOULD** provide the ability to capture the relationship between patient and others.	83	
				IN.4.3	5. The system **SHALL** capture the complaint, presenting problem or other reason(s) for the visit or encounter.	84	
				IN.5.1	6. The system **SHOULD** capture the reason for visit/encounter from the patient's perspective.	85	
				IN.5.2	7. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	86	
				IN.5.4	8. The system **SHALL** conform to function IN.2.2 (Auditable Records).	87	
DC.1.3	**H**	Preferences, Directives, Consents and Authorizations			1. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	88	
					2. The system **SHALL** conform to function IN.2.2 (Auditable Records).	89	
DC.1.3.1	**F**	Manage Patient and Family Preferences	**Statement**: Capture and maintain patient and family preferences. **Description**: 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.	DC.2.1.4 S.3.7.1 IN.2.5.1	1. The system **SHALL** provide the ability to capture, present, maintain and make available for clinical decisions patient preferences such as language, religion, spiritual practices and culture.	90	
				IN.2.5.2	2. The system **SHALL** provide the ability to capture, present, maintain and make available for clinical decisions family preferences such as language, religion, spiritual practices and culture.	91	
				IN.6	3. The system **SHOULD** conform to function DC.2.1.4 (Support for Patient and Family Preferences), and incorporate patient and family preferences into decision support systems.	92	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
DC.1.3.2	F	Manage Patient Advance Directives	**Statement**: Capture and maintain patient advance directives.	S.3.5.1	1. The system **SHALL** provide the ability to indicate that advance directives exist for the patient.	93	
				S.3.5.3			
			Description: Patient advance directives and provider DNR orders are captured as well as the date and circumstances under which the directives were received, and the location of any paper records or legal documentation (e.g. the original) of advance directives as appropriate.	S.3.5.4	2. The system **SHALL** provide the ability to indicate the type of advance directives completed for the patient such as living will, durable power of attorney, preferred interventions for known conditions, or the existence of a "Do Not Resuscitate order".	94	
				IN.1.5	3. The system **SHOULD** provide the ability to capture, present, maintain and make available for clinical decisions patient advance directives documents and "Do Not Resuscitate" orders.	95	
				IN.1.8	4. The system **SHOULD** conform to function DC.1.1.3.1 (Capture Data and Documentation from External Clinical Sources) and capture scanned patient advance directive documents and "Do Not Resuscitate" orders.	96	
				IN.1.9	5. The system **SHOULD** provide the ability to indicate when advanced directives were last reviewed.	97	
				IN.2.2	6. The system **SHOULD** provide the ability to indicate the name and relationship of the party completing the advance directive for the patient.	98	
				IN.2.5.1	7. The system **SHALL** time and date stamp advance directives.	99	
				IN.2.5.2	8. The system **SHOULD** provide the ability to document the location and or source of any legal documentation regarding advance directives.	100	
				IN.6	9. The system **SHOULD** conform to function DC.2.1.4 (Support for Patient and Family Preferences).	101	
DC.1.3.3	F	Manage Consents and Authorizations	**Statement**: Create, maintain, and verify patient decisions such as informed consent for treatment and authorization/consent for disclosure when required.	DC.1.1.3	1. The system **SHALL** provide the ability to indicate that a patient has completed applicable consents and authorizations.	102	
				S.2.2.2			
			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.	S.3.5.1	2. The system **SHALL** provide the ability to indicate that a patient has withdrawn applicable consents and authorizations.	103	
				S.3.5.4	3. The system **SHALL** conform to function DC.1.1.3.1 (Capture Data and Documentation from External Clinical Sources) and capture scanned paper consent and authorization documents.	104	
			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, foster parents. The system must appropriately present forms for adolescents according to privacy rules.	IN.1.5	4. The system **SHOULD** provide the ability to view and complete consent and authorization forms on-line.	105	
			Some states 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).	IN.1.8	5. The system **MAY** provide the ability to generate printable consent and authorization forms.	106	
				IN.1.9	6. The system **MAY** display the authorizations associated with a specific clinical activity, such as treatment or surgery, along with that event in the patient's electronic chart.	107	
				IN.2.2	7. The system **MAY** provide the ability to display consents and authorizations chronologically.	108	
				IN.2.4	8. The system **SHALL** provide the ability to document an assent for patients legally unable to consent.	109	
				IN.2.5.1	9. The system **SHALL** provide the ability to document the source of each consent, such as the patient or the patient's personal representative if the patient is legally unable to provide it.	110	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.2.5.2	10. The system **SHALL** provide the ability to document the patient's personal representative's level of authority to make decisions on behalf of the patient.	111	
				IN.6	11. The system **SHALL** allow for distinction between patient's guardian and the financial guarantor.		
DC.1.4	**H**	Summary Lists		S.2.2.2 IN.2.4 IN.2.5.1	1. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	112	
				IN.2.5.2	2. The system **SHALL** conform to function IN.2.2 (Auditable Records).	113	
DC.1.4.1	**F**	Manage Allergy, Intolerance and Adverse Reaction List	**Statement**: Create and maintain patient-specific allergy, intolerance and adverse reaction lists. **Description**: Allergens, including immunizations, and substances are identified and coded (whenever possible) and the list is captured and maintained over time. 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, dietary or environmental triggers. Notations indicating whether item is patient reported and/or provider verified are maintained.	DC.2.3.1.1	1. The system **SHALL** provide the ability to capture true allergy, intolerance, and adverse reaction to drug, dietary or environmental triggers as unique, discrete entries.	114	
				S.2.2.1	2. The system **SHOULD** provide the ability to capture the reason for entry of the allergy, intolerance or adverse reaction.	115	
				S.2.2.3	3. The system **SHALL** provide the ability to capture the reaction type.	116	
				S.3.7.1	4. The system **SHOULD** provide the ability to capture the severity of a reaction.	117	
				IN.2.5.1	5. The system **SHALL** provide the ability to capture a report of No Known Allergies (NKA) for the patient.	118	
				IN.2.5.2	6. The system **SHOULD** provide the ability to capture a report of No Known Drug Allergies (NKDA) for the patient.	119	
				IN.4.1	7. The system **SHALL** provide the ability to capture the source of allergy, intolerance, and adverse reaction information.	120	
				IN.4.2	8. The system **SHALL** provide the ability to deactivate an item on the list.	121	
				IN.4.3	9. The system **SHALL** provide the ability to capture the reason for deactivation of an item on the list.	122	
				IN.6	10. The system **MAY** present allergies, intolerances and adverse reactions that have been deactivated.	123	
					11. The system **MAY** provide the ability to display user defined sort order of list.	124	
					12. The system **SHOULD** provide the ability to indicate that the list of medications and other agents has been reviewed.	125	
					13. They system **SHALL** provide the ability to capture and display the date on which allergy information was entered.	126	
					14. The system **SHALL** provide the ability to capture and display the approximate date of the allergy occurrence.	127	
					15. The system **MAY** prepare a report of a patient's adverse events upon request for appropriate authorities such as registries and VAERS.		
DC.1.4.2	**F**	Manage Medication List	**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. 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.	S.2.2.1	1. The system **SHALL** provide the ability to capture patient-specific medication lists.	128	
				IN.2.5.1	2. The system **SHALL** display and report patient-specific medication lists.	129	
				IN.2.5.2	3. The system **SHALL** provide the ability to capture the details of the medication such as ordering date, dose, route, formulation, and SIG (description of the prescription, such as the quantity) when known.	130	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.4.1	4. The system **SHALL** provide the ability to capture other dates associated with medications such as start and end dates.	131	
				IN.4.2	5. The system **SHALL** provide the ability to capture medications not reported on existing medication lists or medication histories.	132	
				IN.4.3	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.	133	
				IN.5.1	7. The system **SHALL** present the current medication lists associated with a patient.	134	
				IN.5.2	8. The system **SHOULD** present the medication history associated with a patient.	135	
				IN.5.4	9. The system **SHALL** present the medication, prescriber, and medication ordering dates when known.	136	
				IN.6	10. The system **SHALL** provide the ability to mark a medication as erroneously captured and excluded from the presentation of current medications.	137	
					11. The system **SHALL** provide the ability to print a current medication list for patient use.	138	
					12. The system **MAY** provide the ability to capture information regarding the filling of prescriptions (dispensation of medications by pharmacies or other providers).	139	
					13. If the system SHALL provide the ability to capture maternal medications taken during pregnancy.		
					14. If the system SHOULD provide the ability to capture maternal medications taken while breastfeeding.		
					15. The system **SHALL** record maternal opiate exposure (e.g., methadone or buprenorphine) during pregancy.		Supports screening for Neonatal Abstinence Syndrome.
DC.1.4.3	**F**	Manage Problem List	**Statement**: Create and maintain patient- specific problem lists. **Description**: A problem list may include, but is not limited to: Chronic conditions, diagnoses, or symptoms, 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. In addition all pertinent dates are stored. 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.	DC.2.1.3	1. The system **SHALL** capture, display and report all active problems associated with a patient.	140	
				S.2.2.1	2. The system **SHALL** capture, display and report a history of all problems associated with a patient.	141	
				S.3.3.5	3. The system **SHALL** provide the ability to capture onset date of problem.	142	
				IN.2.4	4. The system **SHOULD** provide the ability to capture the chronicity (chronic, acute/self-limiting, etc.) of a problem.	143	
				IN.2.5.1	5. The system **SHALL** provide the ability to capture the source, date and time of all updates to the problem list.	144	
				IN.2.5.2	6. The system **SHALL** provide the ability to deactivate a problem.	145	
				IN.4.1	7. The system **MAY** provide the ability to re-activate a previously deactivated problem.	146	
				IN.4.2	8. The system **SHALL** provide the ability to display inactive and/or resolved problems.	147	
				IN.4.3	9. The system **SHOULD** provide the ability to manually order/sort the problem list.	148	
				IN.6	10. The system **MAY** provide the ability to associate encounters, orders, medications, notes with one or more problems.	149	
DC.1.4.4	**F**	Manage Immunization List	**Statement:** Create and maintain patient-specific immunization lists.		1. The system **SHALL** capture, display and report all immunizations associated with a patient.	150	
					2. The system **SHALL** record as discrete data elements data associated with any immunization administered including the following: date administered, administering clinician, site of administration (e.g. left arm), immunization type, product, lot number, manufacturer, Vaccine Information Statement date, and quantity of vaccine/dose size.	151	MODIFIED for clarification.

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.		3. The system **SHALL** prepare a report of a patient 's immunization history upon request for appropriate authorities such as schools or day-care centers	152	
					4. The system **SHALL** have the ability to capture consent status as it relates to the administration of each immunization.		
DC.1.4.5		Manage Immunoprophlaxis			1. The system **SHALL** capture, display and report all immunoprphylaxis (e.g., Hepatitis B immune globulin (HBIG), palivizumab (RSV)) associated with a patient .		Functionality similar to that of immunizations.
					2. The system **SHALL** record as discrete data elements data associated with any immunoprphyliaxis administered the following: date administered, administering clinician, site of administration (e.g. left arm), product, lot number, manufacturer.		
					3. The system **SHALL** prepare a report of a patient 's immunoprophylaxis history upon request.		
DC.1.5	**F**	Manage Assessments	**Statement**: Create and maintain assessments. **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 standard assessment does not exist, a unique assessment can be created, using the format and data elements of similar standard assessments whenever possible.	DC.1.5 DC.1.6.2 DC.1.10.1 DC.2.1.1 DC.2.1.2 DC.2.2.1	1. The system **SHALL** provide the ability to create assessments.	153	
				S.2.2.1	2. The system **SHOULD** provide the ability to use standardized assessments where they exist.	154	
				IN.1.6	3. The system **SHALL** provide the ability to document using standard assessments germane to the age, gender, developmental state, and health condition as appropriate to the EHR user's scope of practice.	155	
				IN.2.5.1	4. The system **SHOULD** provide the ability to capture data relevant to standard assessment.	156	
				IN.2.5.2	5. The system **SHOULD** provide the ability to capture additional data to augment the standard assessments relative to variances in medical conditions.	157	
				IN.4.1	6. The system **SHOULD** provide the ability to link data from a standard assessment to a problem list.	158	
				IN.4.2	7. The system **SHOULD** provide the ability to link data from a standard assessment to an individual care plan.	159	
				IN.4.3	8. The system **MAY** provide the ability to link data from external sources, laboratory results, and radiographic results to the standard assessment.	160	
				IN.5.1	9. The system **SHOULD** provide the ability to compare documented data against standardized curves and display trends.	161	
				IN.5.2	10. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	162	
				IN.6	11. The system **SHALL** conform to function IN.2.2 (Auditable Records).	163	
DC.1.6	**H**	Care Plans, Treatment Plans, Guidelines, and Protocols				164	
DC.1.6.1	**F**	Present Guidelines and Protocols for Planning Care	**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.	DC.1.1.2 DC.2.2.1.1 DC.2.2.1.2	1. The system **SHALL** provide the ability to present current guidelines and protocols to clinicians who are creating plans for treatment and care.	165	
				DC.2.2.2	2. The system **SHOULD** provide the ability to search for a guideline or protocol based on appropriate criteria (such as problem).	166	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				DC.2.2.3	3. The system **SHALL** provide the ability to present previously used guidelines and protocols for historical or legal purposes.	167	
				DC.2.7.1	4. IF decision support prompts are used to support a specific clinical guideline or protocol, THEN the system **SHALL** conform to function DC.1.8.6 (Manage Documentation of Clinician Response to Decision Support Prompts).	168	
				S.3.7.1	5. The system **SHALL** conform to function DC.2.2.1.2 (Support for Context-Sensitive Care Plans, Guidelines, Protocols).	169	
				IN.6	6. The system **SHOULD** conform to function IN.2.2 (Auditable Records).	170	
DC.1.6.2	**F**	Manage Patient-Specific Care and Treatment Plans	**Statement**: Provide administrative tools for healthcare organizations to build care plans, guidelines and protocols for use during patient care planning and care.	DC.3.1.1	1. The system **SHALL** provide the ability to capture patient-specific plans of care and treatment.	171	
				DC.3.1.2	2. The system **SHALL** conform to DC.1.6.1 (Present Guidelines and Protocols for Planning Care) and provide the ability to use locally or non-locally developed templates, guidelines, and protocols for the creation of patient-specific plans of care and treatment.	172	
			Description: 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. 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.	DC.3.1.3	3. The system **SHALL** provide the ability to use previously developed care plans as a basis for the creation of new plans of care and treatment.	173	
				IN.2.2	4. The system **SHALL** provide the ability to track updates to a patient's plan of care and treatment including authors, creation date, version history, references, local sources and non-local sources in accordance with scope of practice, organizational policy and jurisdictional law.	174	
				IN.2.5.1	5. The system **SHOULD** provide the ability to coordinate order sets with care plans.	175	
				IN.2.5.2	6. The system **SHOULD** provide the ability to derive order sets from care plans.	176	
				IN.6	7. The system **SHOULD** provide the ability to derive care plans from order sets.	177	
					8. The system **SHALL** provide the ability to transfer plans of care and treatment to other care providers.	178	
					9. The system **SHALL** conform to function DC.3.1.1 (Clinical Task Assignment and Routing) and incorporate care plan items in the tasks assigned and routed.	179	
					10. The system **SHOULD** conform to function DC.3.1.2 (Clinical Task Linking) and incorporate care plan items in the tasks linked.	180	
					11. The system **SHALL** conform to function DC.3.1.3 (Clinical Task Tracking) and incorporate care plan items in the tasks tracked.	181	
					12. The system **SHALL** conform to function IN.2.2 (Auditable Records).	182	
DC.1.7	**H**	Orders and Referrals Management			1. The system **SHALL** conform to function IN.2.2 (Auditable Records).	183	
DC.1.7.1		Manage Medication Orders	**Statement:** Create prescriptions or other medication orders with detail adequate for correct filling and administration. Provide information regarding compliance of medication orders with formularies.	DC.2.3.1.1	1. The system **SHALL** provide the ability to create prescription or other medication orders with the details adequate for correct filling and administration captured as discrete data.	184	
				DC.2.3.1.2	2. The system **SHALL** capture user and date stamp for all prescription related events.	185	
			Description: Different medication orders, including discontinue, refill, and renew, require different levels and kinds of detail, as do medication orders placed in different situations. The correct details are recorded for each situation. Administration or patient instructions are available for selection by the ordering clinicians, 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.	DC.2.3.1.3	3. The system **SHALL** conform to function DC.1.4.2 (Manage Medication List) and update the appropriate medication list with the prescribed medications (in case of multiple medication lists).	186	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.	DC.2.4.2	4. The system **SHALL** provide a list of medications to search, including both generic and brand name.	187	
				DC.3.2.2	5. The system **SHALL** provide the ability to maintain a discrete list of orderable medications.	188	
			Also note that one can write prescriptions for over-the-counter medications.	S.2.2.1	6. The system **SHALL** conform to function DC.1.7.2.1 (Manage Non-Medication Patient Care Orders) and provide the ability to order supplies associated with medication orders in accordance with scope of practice, organizational policy or jurisdictional law.	189	
				S.3.3.2	7. The system **MAY** make common content available for prescription details to be selected by the ordering clinician.	190	
				S.3.7.2	8. The system **MAY** provide the ability for the ordering clinician to create prescription details as needed (e.g. body weight, dose per kilogram, instructions to the pharmacy to dispense medication in two labeled packages – one for home administration and one for administration during the day at school, child care or other care setting).	191	
				IN.2.4	9. The system **MAY** make available common patient medication instruction content to be selected by the ordering clinician.	192	
				IN.2.5.2	10. The system **MAY** provide the ability to include prescriptions in order sets.	193	
				IN.4.1	11. The system **MAY** provide a list of frequently-ordered medications by diagnosis by provider which could include the full details of the medication, including SIG, quantity, refills, DAW, etc.	194	
				IN.4.2	12. The system **MAY** provide the ability to select drugs by therapeutic class and/or indication.	195	
				IN.4.3	13. The system **MAY** conform to function S.3.3.2 (Eligibility Verification and Determination of Coverage) and display the results of electronic prescription eligibility and health plan/payer formulary checking.	196	
				IN.5.1	14. The system **MAY** provide the ability to re-prescribe medication by allowing a prior prescription to be reordered without re-entering previous data (e.g. administration schedule, quantity).	197	
				IN.5.2	15. The system **SHALL** provide the ability to re-prescribe a medication from a prior prescription using the same dosage but allow for editing of details adequate for correct filling and administration of medication (e.g. dose, frequency, body weight).	198	
				IN.5.4	16. The system **SHOULD** conform to function DC.2.3.1.1 (Support for Drug Interaction Checking) and check and report allergies, drug-drug interactions, and other potential adverse reactions, when new medications are ordered.	199	
				IN.6	17. The system **SHOULD** conform to function DC.2.3.1.2 (Support for Patient Specific Dosing and Warnings) and check and report other potential adverse reactions, when new medications are ordered.	200	
					18. The system **SHOULD** provide the ability to create prescriptions in which the weight-specific dose is suggested.	201	
					19. The system **SHOULD** conform to function DC.2.3.1.3 (Support for Medication Recommendations).	202	
DC.1.7.2	**H**	Non-Medication Orders and Referrals Management				203	
DC.1.7.2.1	**F**	Manage Non-Medication Patient Care Orders	**Statement**: Capture and track patient care orders. Enable the origination, documentation, and tracking 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, durable medical equipment, home IV, and diet or therapy orders. Each item ordered includes the appropriate detail, such as order identification and instructions. Orders should be communicated to the correct service provider for completion.	DC.2.4.1 DC.2.4.2 S.2.2.1 S.3.3.3	1. The system **SHALL** provide the ability to capture non-medication patient care orders for an action or item	204	
				S.3.7.1	2. The system **SHALL** provide the ability to capture adequate order detail for correct order fulfillment	205	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.1.6	3. The system **SHALL** track the status of the ordered action or item	206	
				IN.1.7	4. The system **SHOULD** provide the ability to capture patient instructions necessary for correct order fulfillment	207	
				IN.2.5.1	5. The system **SHOULD** provide the ability to present patient instructions necessary for correct order fulfillment	208	
				IN.2.5.2	6. The system **SHOULD** provide the ability to communicate the order to the correct recipient(s) for order fulfillment	209	
				IN.6	7. The system **SHALL** conform to DC.2.4.2 (Support for Non-Medication Ordering)	210	
DC.1.7.2.2	**F**	Manage Orders for Diagnostic Tests	**Statement**: Enable the origination, documentation, and tracking of orders for diagnostic tests. **Description**: Orders for diagnostic tests (e.g. diagnostic radiology, blood test) 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).	DC.2.4.5.2 S.2.2.1	1. The system **SHALL** provide the ability to capture orders for diagnostic tests.	211	
				S.3.7.1	2. The system **SHALL** provide the ability to capture adequate order detail for correct diagnostic test fulfillment.	212	
				IN.1.6	3. The system **SHALL** provide the ability to track the status of diagnostic test(s).	213	
				IN.1.7	4. The system **SHOULD** provide the ability to capture and present patient instructions relevant to the diagnostic test ordered.	214	
				IN.2.5.1	5. The system **SHALL** communicate orders to the service provider of the diagnostic test.	215	
				IN.2.5.2	6. The system **SHOULD** communicate supporting detailed documentation to the correct service provider of the diagnostic test.	216	
				IN.6	7. The system **SHALL** conform to DC.2.4.2 (Support for Non-Medication Ordering).	217	
DC.1.7.2.3	**F**	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.	DC.2.4.5.1	1. The system **SHALL** provide the ability to interface with systems of blood banks or other sources to manage orders for blood products or other biologics.	218	
				S.1.1	2. The system **SHALL** provide the ability to capture use of such products in the provision of care.	219	
				S.1.2	3. The system **SHOULD** conform to function S.1.1 (Registry Notification).	220	
					4. The system **SHALL** allow ordering of blood products in units appropriate to pediatric care (such as ml/kg, "pedipacks" and other alliquots).		
					5. The system **SHOULD** provide decision support to indicate whether a new type and screen is indicated for a blood product transfusion.		
					6. IF part of the the scope of practice, the system SHALL allow ordering of blood products, fluids, and electrolyte solutions for an ECMO circuit that is distinct from the patient.		
DC.1.7.2.4	**F**	Manage Referrals	**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.	DC.1.9.3 DC.2.4.4.1 DC.2.4.4.2 S.1.3.1a	1. The system **SHALL** provide the ability to capture and communicate referral(s) to other care provider (s), whether internal or external to the organization.	221	
				S.1.3.5	2. The system **SHALL** provide the ability to capture clinical details as necessary for the referral.	222	
				S.3.3.2	3. The system **SHALL** provide the ability to capture administrative details (such as insurance information, consents and authorizations for disclosure) as necessary for the referral.	223	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				S.3.3.3	4. The system **SHALL** present captured referral information.	224	
				IN.1.6	5. The system **SHOULD** provide the ability to capture completion of a referral appointment.	225	
				IN.1.7	6. The system **SHOULD** provide diagnosis based clinical guidelines for making a referral.	226	
				IN.2.5.1	7. The system **MAY** provide order sets for referral preparation.	227	
				IN.2.5.2	8. The system **SHALL** provide the ability to document transfer of care according to organizational policy, scope of practice, and jurisdictional law.	228	
DC.1.7.3	**F**	Manage Order Sets	**Statement**: Provide order sets based on provider input or system prompt. **Description**: Order sets, which may include medication and non-medication orders, allow a care provider to choose common orders for a particular circumstance or disease state according to standards or other criteria. Recommended order sets may be presented based on patient data or other contexts.	DC.2.4.1	1. The system **SHALL** provide the ability to present order set(s).	229	
				IN.2.5.1	2. The system **SHALL** provide the ability to order at the patient level from presented order sets.	230	
				IN.2.5.2	3. The system **SHALL** provide the ability to record each component of an order set that is ordered.	231	
				IN.6	4. The system **SHALL** conform to function DC.2.4.1 (Support for Order Sets).	232	
					5. The system **MAY** provide the ability for a provider to choose from among the order sets pertinent to a certain disease or other criteria.	233	
DC.1.8	**H**	Documentation of Care, Measurements and Results			1. The system **SHALL** conform to function IN.2.2 (Auditable Records)	234	
DC.1.8.1	**F**	Manage Medication Administration	**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 DC.1.1.1). 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.	DC.1.1.1 DC.2.3.1.1 DC.2.3.1.2 DC.2.3.2 S.2.2.1 S.2.2.3 IN.1.1 IN.1.2	1. The system **SHALL** present the list of medications to be administered.	235	
				IN.1.3	2. The system **SHALL** display the timing, route of administration, and dose of all medications on the list.	236	
				IN.1.7	3. The system **SHOULD** display instructions for administration of all medications on the list.	237	
				IN.1.9	4. The system **MAY** notify the clinician when specific doses are due.	238	
				IN.2.4	5. The system **MAY** conform to function DC.2.3.1.1 (Support for Drug Interaction Checking) and check and report allergies, drug-drug interactions, and other potential adverse reactions, when new medications are about to be given.	239	
				IN.2.5.1	6. The system **MAY** conform to function DC.2.3.1.2 (Support for Patient Specific Dosing and Warnings) and check and report other potential adverse reactions, when new medications are about to be given.	240	
				IN.2.5.2	7. The system **SHALL** provide the ability to capture medication administration details – including timestamps, observations, complications, and reason if medication was not given – in accordance with organizational policy, scope of practice, and jurisdictional law.	241	
				IN.6	8. The system **SHALL** securely relate interventions to be administered to the unique identity of the patient.	242	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
DC.1.8.2	F	Manage Immunization Administration	**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, 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.	DC.1.3.2 S.1.1 S.2.2.2 S.3.7.1	1. The system **SHALL** provide the ability to recommend required immunizations, and when they are due, during an encounter based on widely accepted immunization schedules.	243	
				IN.1.6	2. The system **SHALL** provide the ability to recommend required immunizations based on patient risk factors.	244	
				IN.1.7	3. The system **SHALL** perform checking for potential adverse or allergic reactions for all immunizations when they are about to be given.	245	
				IN.2.4	4. The system **SHALL** provide the ability to capture immunization administration details, including date, type, lot number and manufacturer.	246	
				IN.2.5.1	5. The system **SHALL** provide the ability to capture other clinical data pertinent to the immunization administration (e.g. vital signs per DC.1.8.4).	247	
				IN.2.5.2	6. The system **SHALL** record as discrete data elements data associated with any immunization.	248	
				IN.3.1	7. The system **SHOULD** provide the ability to associate standard codes with discrete data elements associated with an immunization.	249	
				IN.3.2	8. The system **SHALL** provide the ability to update the immunization schedule.	250	
				IN.4.1	9. The system **SHALL** provide the ability to prepare a report of a patient's immunization history upon request for appropriate authorities such as schools or day-care centers.	251	
				IN.4.2	10. The system **SHALL** conform to function DC.1.4.1 (Manage Allergy, Intolerance and Adverse Reaction Lists).	252	
				IN.4.3	11. The system **SHOULD** transmit required immunization information to a public health immunization registry.	253	
				IN.5.1	12. The system **SHOULD** receive immunization histories from a public health immunization registry.	254	
				IN.5.2	13. The system **SHOULD** synchronize immunization histories with a public health immunization registry according to applicable laws and regulations, where they exist.		
				IN.6	14. The system **SHALL** provide the ability to update the immunization schedule on demand for reasons including but not limited to updates to external guidelines.		
DC.1.8.3	F	Manage Results	**Statement**: Present, annotate, and route current and historical test results to appropriate providers or patients 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. Flow sheets, graphs, or other tools allow care providers to view or uncover trends in test data over time. In addition to making results viewable, it is often necessary to send results to appropriate providers using electronic messaging systems, pagers, or other mechanisms. Documentation of notification is accommodated. Results may also be routed to patients electronically or by letter.	DC.2.4.3	1. The system **SHALL** provide the ability to present numerical and non-numerical current and historical test results to the appropriate provider.	255	
				S.2.2.1	2. The system **SHALL** provide the ability to filter results for a unique patient.	256	
				S.3.7.1	3. The system **SHALL** provide the ability to filter results by factors that supports results management, such as type of test and date range.	257	
				IN.1.6	4. The system **SHOULD** indicate normal and abnormal results depending on the data source.	258	
				IN.1.7	5. The system **SHOULD** provide the ability to filter lab results by range, e.g. critical, abnormal or normal.	259	
				IN.2.4	6. The system **SHOULD** display numerical results in flow sheets, graphical form, and allow comparison of results.	260	
				IN.2.5.1	7. The system **SHALL** provide the ability to group tests done on the same day.	261	
				IN.2.5.2	8. The system **SHALL** notify relevant providers (ordering, copy to) that new results have been received.	262	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.6	9. The system **SHALL** provide the ability for the user, to whom a result is presented, to acknowledge the result.	263	
					10. The system **SHOULD** provide the ability to route results to other appropriate care providers, such as nursing home, consulting physicians, etc.	264	
					11. The system **MAY** route results to patients by methods such as phone, fax, electronically or letter.	265	
					12. The system **SHOULD** provide the ability for providers to pass on the responsibility to perform follow up actions to other providers.	266	
					13. The system **MAY** provide the ability for an authorized user to group results into clinically logical sections.	267	
					14. The system **SHOULD** trigger decision support algorithms from the results.	268	
					15. IF the system contains the electronic order, THEN the results **SHALL** be linked to a specific order.	269	
					16. The system **MAY** provide the ability for providers to annotate a result.	270	
					17. The system **MAY** display a link to an image associated with results.	271	
DC.1.8.4	**F**	Manage Patient Clinical Measurements	**Statement**: Capture and manage patient clinical measures, such as vital signs, as discrete patient data.	IN.2.5.1	1. The system **SHALL** capture patient vital signs, including weight, height or length, head circumference, blood pressure (including respective extremities), temperature, heart rate, respiratory rate, preductal and postductal pulse oximetry saturation (SpO2), signs of opiate withdrawal, and severity of pain as discrete elements of structured or unstructured data.	272	MODIFIED.
					2 The system SHALL capture episodic events (e.g., apnea, bradycardic, desaturation) including the duration of the event, lowest noted HR and SpO2 and the type of intervention, if applicable. Such episodes SHOULD be distinct from the maximum and minimum vital sign ranges recorded in interval (e.g., daily) summaries of patient data.		
				IN.2.5.2	3. IF required by the scope of practice, THEN the system **SHALL** capture psychiatric symptoms and daily functioning as structured or unstructured data.	273	
			Description: 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.		3. The system **SHOULD** capture other clinical measures such as peak expiratory flow rate, size of lesions, oxygen saturation, height, weight, and body mass index as discrete elements of structured or unstructured data.	274	
					4. The system **SHALL** compute and display percentile values and number of standard deviations from the mean when data with normative distributions are entered.	275	
					5. The system **SHALL** provide normal ranges for numeric and 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, ethnic background, gestational age when available.	276	
					6. The system **SHALL** display growth charts. A growth chart: includes growth data (weight, length or height and head circumference) on a graph that includes normative data plotted against population-based normative curves (e.g. www.cdc.gov/growthcharts) by age ranges and gender of the respective normative data (e.g. females 0-36 months).		
					7. The system **SHOULD** compute and display body mass index and growth velocity and plot them against aged-based normative curves.		
					8. The system **SHOULD** capture data using different units of measurement (e.g. grams, kilograms and pounds).		
					9. The system **SHOULD** display growth curves as defined in Conformance Criteria 1.8.4.6 with other demographic characteristics (e.g. ethnicity) of the respective normative data.		
					10. The system **SHALL** provide the ability to manage data points from the graphical growth chart. (To avoid having to close the chart to edit data points in a separate spreadsheet.)		
					11. The system **SHOULD** allow display of clinical context for each data point on the growth chart (e.g. ventilated, receiving growth hormone, Tanner stage).		
					12. The system **SHOULD** compute mid parental height by gender-specific parent height percentiles.		
					13. The system **MAY** display predictive growth curves or growth targets based on mid parental height or other techniques.		
					14. The system **MAY** capture bone age and display it on growth charts.		
					15. The system **SHOULD** support user interface preferences (e.g. zooming, hiding data points, annotating).		
					16. The system **MAY** request height input when not available.		
					17. The system **MAY** provide normal ranges for numeric and non-numeric data based on stage of sexual maturity (Tanner stage).		

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					18. The system **SHALL** allow printing of the growth chart to provide to patient/family at the time of the visit.		
DC.1.8.5	F	Manage Clinical Documents and Notes	**Statement**: Create, addend, correct, authenticate 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, graphical, audio, etc.. The documents may also be structured documents that result in the capture of coded data. Each of these forms of clinical documentation is important and appropriate for different users and situations.	IN.2.2 IN.2.5.1 IN.2.5.2	1. The system **SHALL** provide the ability to capture clinical documentation (henceforth "documentation") including original, update by amendment in order to correct, and addenda. 2. The system **SHALL** provide the ability to capture free text documentation. 3. The system **SHOULD** present documentation templates (structured or free text) to facilitate creating documentation.	277 278 279	
					4. The system **SHALL** provide the ability to view other documentation within the patient's logical record while creating documentation.	280	
					5. The system **SHOULD** provide the ability to associate documentation for a specific patient with a given event, such as an office visit, phone communication, e-mail consult, lab result, etc.	281	
					6. The system **SHOULD** provide the ability to associate documentation with problems and/or diagnoses.	282	
					7. The system **SHALL** provide the ability to update documentation prior to finalizing it.	283	
					8. The system **SHALL** provide the ability to finalize a document or note.	284	
					9. The system **SHALL** provide the ability to attribute record and display the identity of all users contributing to or finalizing a document or note, including the date and time of entry (see appropriate criteria in IN.2.2 (Auditable Records)).	285	
					10. The system **SHALL** present captured documentation.	286	
					11. The system **SHALL** manage the mode and settings of respiratory support for invasive and non-invasive modes of ventilation.		
					12. The system **SHALL** provide he ability to capture detailed input (e.g., enteral, parenteral, blood products) and output (e.g., urine, stool, drains) by category and calculate these in terms of weight and time (e.g., urine output in mL/kg/hr) if appropriate.		
					13. The system **SHALL** support enteral feedings via multiple combinations of routes (e.g., PO & NG, ostomy) and method of deivery (gravity vs. pump; bolus vs. continuous), and temporal intervals (e.g. 8PM to 6AM or "over 1 hour"),		
					14. The system **SHOULD** support calculations of caloric intake via intravenous and enteral routes.		
					15. Procedure Notes SHOULD have the ability to link to documentation of multiple indwelling vascular access, drains, airways.		
					16. The system **MAY** provide the ability to filter, search or sort notes.	287	
					17. The system **SHOULD** provide documentation templates for data exchange.	288	
DC.1.8.6	F	Manage Documentation of Clinician Response to Decision Support Prompts	**Statement**: Capture the decision support prompts and manage decisions to accept or override decision support prompts. **Description**: Clinician actions in response to decision support prompts are captured and can be managed at the patient level or aggregated for organizational trending.	S.3.7.1 IN.2.5.1 IN.2.5.2 IN.6	1. The system **SHALL** provide the ability to capture clinical decision support prompts and user decisions to accept or override those prompts. 2. The system **SHALL** provide the ability to record the reason for variation from the decision support prompt.	289 290	
					3. The system **SHOULD** provide the ability to display recorded variances upon request by authorized users of the EHR.	291	
DC.1.8.7	F	Manage Data Associated with Breast Milk Storage and Administration	**Statement:** EHR systems should support data management required to ensure accurate recording of the source of breast milk stored for administration to a specified infant. **Description:** Breast milk storage requires specimen labeling and inventory control, as well as matching the correct specimen to the correct infant.	DC.1.1.1	1. The system **SHALL** accurately manage data associated with the administration of breast milk products, including patient identifying data, breast milk aliquot identifying data, amount, route (e.g. oral vs. tube), expiration date and time of administration. 2. The system **SHOULD** capture validation of the correct matching of the patient to the milk product. 3. The system **SHALL** capture the breast milk aliquot identifying data, amount, route, and time of administration.		MODIFIED.
					4. The system SHALL provide the abilty to breastmilk source (i.e., maternal or donor).		
					5. The system SHALL provide the abilty to document multiple additives (e.g. human milk fortifier, MCT oil, etc…) to enteral feedings of breastmilk.		
					6. The system **SHALL** conform to function S.2.2.1 (Health Record Output).		

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
DC.1.9	**F**	Generate and Record Patient-Specific Instructions	**Statement**: Generate and record patient-specific instructions related to pre- and post-procedural and post- 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.	DC.2.2.4 DC.2.7.2 DC.3.2.3 DC.3.2.4	1. The system **SHALL** provide the ability to generate instructions pertinent to the patient for standardized procedures.	292	
				S.3.7.2	2. The system **SHALL** provide the ability to generate instructions pertinent to the patient based on clinical judgment.	293	
				S.3.7.3	3. The system **SHALL** provide the ability to include details on further care such as follow up, return visits and appropriate timing of further care.	294	
				IN.1.8	4. The system **SHALL** provide the ability to record that instructions were given to the patient.	295	
				IN.2.2	5. The system **SHALL** provide the ability to record the actual instructions given to the patient or reference the document(s) containing those instructions.	296	
				IN.6	6. The system **SHALL** conform to function IN.2.2 (Auditable Records).	297	
DC.2	**H**	**Clinical Decision Support**			1. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	298	
					2. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	299	
					3. The system **SHALL** conform to function IN.1.3 (Entity Access Control).	300	
					4. IF the system is used to enter, modify or exchange data, THEN the system **SHALL** conform to function IN.1.5 (Non-Repudiation), to guarantee that the sources and receivers of data cannot deny that they entered/sent/received the data.	301	
					5. IF the system exchanges data outside of a secure network, THEN the system **SHALL** conform to function IN.1.6 (Secure Data Exchange), to ensure that the data are protected.	302	
					6. IF the system exchanges outside of a secure network, THEN the system **SHALL** conform to function IN.1.7 (Secure Data Routing), to ensure that the exchange occurs only among authorized senders and receivers.	303	
					7. IF the system is used to enter or modify data in the health record, THEN the system **SHALL** conform to function IN.1.8 (Information Attestation), to show authorship and responsibility for the data.	304	
					8. The system **SHALL** conform to function IN.2.1 (Data Retention, Availability and Destruction).	305	
					9. The system **SHOULD** conform to function IN.2.3 (Synchronization).	306	
					10. IF the system is used to extract data for analysis and reporting, THEN the system **SHALL** conform to function IN.2.4 (Extraction of Health Record Information), to support data extraction across the complete health record of an individual.	307	
					11. IF the system stores unstructured data, THEN the system **SHALL** conform to function IN.2.5.1 (Manage Unstructured Health Record Information), to ensure data integrity through all changes.	308	
					12. IF the system stores structured data, THEN the system **SHALL** conform to function IN.2.5.2 (Manage Structured Health Record Information), to ensure data integrity through all changes.	309	
					13. IF the system processes data for which generally accepted standard terminologies have been established, THEN the system **SHALL** conform to function IN.4.1 (Standard Terminologies and Terminology Models), to support semantic interoperability.	310	
					14. IF the system processes data for which generally accepted standard terminologies have been established, THEN the system **SHALL** conform to function IN.4.2 (Maintenance and Versioning of Standard Terminologies), to preserve the semantics of coded data over time.	311	
					15. The system **SHOULD** conform to function IN.4.3 (Terminology Mapping).	312	
					16. IF the system exchanges data for which generally accepted interchange standards have been established, THEN the system **SHALL** conform to function IN.5.1 (Interchange Standards), to support interoperability.	313	
					17. IF the system exchanges data for which generally accepted interchange standards have been established, THEN the system **SHALL** conform to function IN.5.2 (Interchange Standards Versioning and Maintenance), to accommodate the inevitable evolution of interchange standards.	314	
					18. The system **SHOULD** conform to function IN.5.3 (Standards-based Application Integration).	315	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					19. IF the system exchanges data with other systems outside itself, THEN the system **SHALL** conform to function IN.5.4 (Interchange Agreements), to define how the sender and receiver will exchange data.	316	
					20. The system **SHOULD** conform to function IN.6 (Business Rules Management).	317	
					21. The system **SHOULD** conform to function IN.7 (Workflow Management).	318	
DC.2.1	**H**	Manage Health Information to Provide Decision Support			1. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	319	
					2. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	320	
					3. The system **SHALL** conform to function IN.2.2 (Auditable Records).	321	
					4. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	322	
DC.2.1.1	**F**	Support for Standard Assessments	**Statement**: Offer prompts to support the adherence to care plans, guidelines, and protocols at the point of information capture. **Description**: 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 II diabetic review, fall and 70+, rectal bleeding, etc.	DC.1.4	1. The system **SHALL** provide the ability to access the standard assessment in the patient record.	323	
				DC.1.5	2. The system **SHALL** provide the ability to access to health standards and practices appropriate to the EHR user's scope of practice.	324	
				S.3.7.1	3. The system **SHOULD** provide the ability to compare elements of assessments captured by the clinician and those available as best practices and/or evidence based resources.	325	
				IN.2.3	4. The system **MAY** provide the ability to derive supplemental assessment data from evidence based standard assessments, practice standards, or other generally accepted, verifiable, and regularly updated standard clinical sources.	326	
				IN.2.4	5. The system **SHOULD** provide prompts based on practice standards to recommend additional assessment functions.	327	
				IN.6	6. The system **SHOULD** conform to function DC.1.4.3 (Manage Problem List) and provide the ability to update the problem list by activating new problems and de-activating old problems as identified by conduct of standard assessments.	328	
					7. The system **SHOULD** provide the ability to create standard assessments that correspond to the problem list.	329	
					8. The system **SHOULD** conform to function DC 2.1.2 (Support for Patient Context-driven Assessments).	330	
DC.2.1.2	**F**	Support for Patient Context- Driven Assessments	**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. 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 who has abdominal pain.	DC.1.4	1. The system **SHALL** provide the ability to access health assessment data in the patient record	331	
				DC.1.5	2. The system **SHOULD** provide the ability to compare assessment data entered during the encounter and the accessed health evidence based standards and best practices	332	
				S.3.7.1	3. The system **SHOULD** provide the ability to compare health data and patient context-driven assessments to practice standards in order to prompt additional testing, possible diagnoses, or adjunctive treatment	333	
				IN.2.3	4. The system **SHOULD** provide the ability to correlate assessment data and the data in the patient specific problem list	334	
				IN.2.4	5. The system **SHALL** conform to function DC 2.1.1 (Support for Standard Assessments)	335	
				IN.6	6. The system **SHALL** conform to function DC.1.5 (Manage Assessments)	336	
					7. The system **SHOULD** conform to function DC.1.4.3 (Manage Problem List)	337	
DC.2.1.3	**F**	Support for Identification of Potential Problems and Trends	**Statement**: Identify trends that may lead to significant problems, and provide prompts for consideration.	DC.1.4	1. The system **SHALL** conform to function DC.1.5 (Manage Assessments) and provide the ability to access standard assessment data in the patient record.	338	
				DC.1.5	2. The system **SHOULD** provide the ability to access health standards and practices appropriate to the EHR user's scope of practice at the time of the encounter.	339	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			Description: When personal health information is collected directly during a patient visit, input by the patient, or acquired from an external source (lab results), it is important to be able to identify potential problems and trends that may be patient-specific, given the individual's personal health profile, or changes warranting further assessment. For example: significant trends (lab results, weight); a decrease in creatinine clearance for a patient on metformin, an abnormal increase in INR for a patient on warfarin, an increase in suicidal ideation; presence of methamphetamines; or absence of therapeutic levels of antidepressants.	S.3.7.1	3. The system **SHALL** provide the ability to compare patient context-driven assessments and additional health information to best practices in order to identify patient specific growth or development patterns, health trends and potential health problems.	340	
				S.3.7.2	4. The system **SHOULD** provide the ability to configure rules defining abnormal trends.	341	
				S.3.7.4	5. The system **SHOULD** prompt the provider with abnormal trends.	342	
				IN.6	6. The system **SHOULD** prompt the provider for additional assessments, testing or adjunctive treatment.	343	
					7. The system **SHOULD** conform to function DC.1.8.6 (Manage Documentation of Clinician Response to Decision Support Prompts).	344	
					8. The system **MAY** provide the ability to integrate health information contained in the record with appropriate teaching materials.	345	
					9. The system **SHOULD** conform to function DC 2.2.1.2 (Support for Context-sensitive Care Plans, Guidelines, Protocols).	346	
DC.2.1.4	**F**	Support for Patient and Family Preferences	**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 treatment plans or specifically to a treatment plan.	DC.1.1.4 DC.1.6.1 DC.1.6.2 DC.1.6.3 DC.1.11.1 DC.1.11.2 DC.2.2.1.1	1. The system **SHALL** conform to DC.1.3.1 (Manage Patient and Family Preferences).	347	
				DC.2.2.1.2	2. The system **SHALL** provide for the ability to capture and manage patient and family preferences as they pertain to current treatment plans.	348	
				DC.2.2.2	3. The system **SHALL** 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.	349	
				S.3.7.1	4. The system **SHOULD** provide the ability to compare care guidelines and options relating to documented patient and family preferences, including standards of practice.	350	
				S.3.7.2	5. The system **SHOULD** prompt the provider for testing and treatment options based on patient and family preferences and provide the ability to compare to standard practice.	351	
				S.3.7.4	6. The system **MAY** provide the ability to integrate preferences with appropriate teaching materials.	352	
				IN.6	7. The system **SHOULD** provide the ability to integrate necessary documentation of preferences, such as living wills, specific consents or releases.	353	
					8. The system **SHALL** conform to function DC.1.3.2 (Manage Patient Advance Directives).	354	
DC.2.2	**H**	Care and Treatment Plans, Guidelines and Protocols		DC.1.2	1. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	355	
					2. The system **SHALL** conform to function IN.2.2 (Auditable Records).	356	
DC.2.2.1	**H**	Support for Condition Based Care and Treatment Plans, Guidelines, Protocols			1. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	357	
					2. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	358	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
DC.2.2.1.1	**F**	Support for Standard Care Plans, Guidelines, Protocols	**Statement**: Support the use of appropriate standard care plans, guidelines and/or protocols for the management of specific conditions. **Description**: Before they can be accessed upon request (e.g., in DC 1.6.1), standard care plans, protocols, and guidelines must be created. These documents 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, and protocols can be identified and reported.	DC 1.6.1	1. The system **SHALL** conform to function DC.1.6.1 (Present Guidelines and Protocols for Planning Care) and provide the ability to access standard care plans, protocols and guidelines when requested within the context of a clinical encounter.	359	
					2. The system **SHOULD** provide the ability to create and use site-specific care plans, protocols, and guidelines.	360	
					3. The system **SHOULD** provide the ability to make site-specific modifications to standard care plans, protocols, and guidelines obtained from outside sources.	361	
					4. The system **SHOULD** identify, track and provide alerts, notifications and reports about variances from standard care plans, guidelines and protocols.	362	
					5. The system **SHALL** conform to DC.2.2.1.2 (Support for Context-Sensitive Care Plans, Guidelines, Protocols).	363	
					6. The system **SHALL** conform to DC.2.1.1 (Support for Standard Assessments).	364	
					7. The system **SHALL** provide the ability to access age-specific guidelines.		
DC.2.2.1.2	**F**	Support for Context-Sensitive Care Plans, Guidelines, Protocols	**Statement**: Identify and present the appropriate care plans, guidelines and/or protocols 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.	DC 1.3.1	1. The system **SHALL** provide the ability to access care and treatment plans that are sensitive to the context of patient data and assessments.	365	
				DC 1.4	2. The system **SHOULD** provide the ability to capture care processes across the continuum of care.	366	
				DC 1.5	3. The system **SHOULD** present care processes from across the continuum of care.	367	
				DC 1.6	4. The system **SHOULD** provide the ability to document the choice of action in response to care plan suggestions.	368	
				DC.1.6.1	5. The system **SHOULD** identify, track and provide alerts, notifications and reports about variances from standard care plans, guidelines and protocols.	369	
				DC.1.6.3	6. The system **SHALL** conform to function DC.2.2.1.1 (Support for Standard Care Plans, Guidelines, Protocols).	370	
				S.2.2.1	7. The system **SHALL** conform to function DC.2.1.1 (Support for Standard Assessments).	371	
				IN.2.4	8. The system **SHALL** conform to function DC.2.1.2 (Support for Patient Context-Driven Assessments).	372	
				IN.6	9. The system **SHOULD** include the ability to use 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.		
DC.2.2.2	**F**	Support Consistent Healthcare Management of Patient Groups or Populations	**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**:	DC.2.2.1.2	1. The system **SHALL** conform to DC.2.2.1.2 (Support for Context-Sensitive Care Plans, Guidelines, Protocols).	373	
				S.2.2.2	2. The system **SHALL** provide the ability to identify patients eligible for healthcare management protocols based on criteria identified within the protocol.	374	
				IN.2.2	3. The system **SHOULD** provide the ability to include or exclude a patient from an existing healthcare management protocol group.	375	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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 racial, cultural, religious, socio-economic, living situation and functional accommodations of the patient that are required to provide appropriate care. A further example-- the clinician may be notified of 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.	IN.6	4. The system **SHOULD** provide the ability to audit compliance of selected populations and groups that are the subjects of healthcare management protocols.	376	
					5. The system **SHALL** conform to function S.2.2.2 (Standard Report Generation).	377	
					6. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	378	
DC.2.2.3	**F**	Support for Research Protocols Relative to Individual Patient Care	**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.	S.1.1 S.1.5 S.2.2.2 S.3.3.1 IN.1.1 IN.1.2 IN.1.3 IN.1.9 IN.2.2 IN.2.4 IN.4.1	1. The system **SHALL** provide the ability to present protocols for patients enrolled in research studies.	379	
				IN.4.2	2. The system **SHALL** provide the ability to maintain research study protocols.	380	
				IN.4.3	3. The system **SHOULD** conform to function S.3.3.1 (Enrollment of Patients), to enable participation in research studies.	381	
				IN.5.1	4. The system **SHOULD** provide the ability to identify and track patients participating in research studies.	382	
				IN.5.2	5. The system **SHOULD** provide the ability to capture appropriate details of patient condition and response to treatment as required for patients enrolled in research studies.	383	
				IN.5.4	6. The system **SHALL** conform to function S.2.2.2 (Standard Report Generation).	384	
				IN.6	7. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	385	
				IN.7	8. IF research protocols require standardized transmission of data to/from a registry or directory, THEN the system **SHALL** conform to function IN.3 (Registry and Directory Services).	386	
DC.2.2.4	**F**	Support Self-Care	**Statement**: Provide the patient with decision support for self-management of a condition between patient-provider encounters. **Description**: Patients with specific conditions need to follow self-management plans that may include schedules for home monitoring, lab tests, and clinical check ups; recommendations about nutrition, physical activity, tobacco use, etcetera; and guidance or reminders about medications.	DC.1.1.4 DC.1.11.1 S.3.7.1	1. The system **SHALL** provide the ability to present patient guidance and reminders appropriate for self-management of clinical conditions.	387	
				S.3.7.2	2. The system **SHALL** provide the ability to manage and/or develop patient guidance and reminders related to specific clinical conditions.	388	
			Information to support self-care may be appropriately provided to: 1. the patient 2. a surrogate (parent, spouse, guardian), or	S.3.7.3 IN.1.4 IN.1.9	3. The system **SHOULD** conform to function DC.1.1.3.2 (Capture of Patient Originated Data). 4. The system **SHOULD** conform to function DC.1.3.1 (Manage Patient and Family Preferences). 5. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	389 390 391	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			3. others involved directly in the patients self care	IN.6	6. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	392	
DC.2.3	**H**	Medication and Immunization Management			1. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	393	
					2. The system **SHALL** conform to function IN.2.2 (Auditable Records).	394	
					3. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	395	
DC.2.3.1	**H**	Support for Medication and Immunization Ordering				396	
DC.2.3.1.1	**F**	Support for Drug Interaction Checking	**Statement**: Identify drug interaction warnings time of medication ordering. **Description**: The clinician is alerted to drug-drug, drug-allergy, and drug-food 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. 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 function to allow access to the diagnosis or problem for which a medication was ordered. This may vary based on jurisdictional law.	S.3 IN.2.4 IN.6	1. The system **SHALL** check for and alert providers to interactions between prescribed drugs and medications on the current medication list.	397	
					2. The system **SHALL** relate medication allergies to medications to facilitate allergy checking decision support for medication orders.	398	
					3. The system **SHOULD** provide the ability to document that a provider was presented with and acknowledged a drug interaction warning.	399	
					4. The system **SHALL** provide the ability to prescribe a medication despite alerts for interactions and/or allergies being present.	400	
					5. The system **MAY** provide the ability to set the severity level at which warnings should be displayed.	401	
					6. The system **SHOULD** provide the ability to check for duplicate therapies.	402	
					7. The system **SHOULD** conform to DC.1.8.6 (Manage Documentation of Clinician Response to Decision Support Prompts) and provide the ability to document why a drug interaction warning was overridden.	403	
					8. The system **MAY** check for interactions between prescribed drugs and food detailing changes in a drug's effects potentially caused by food (including beverages) consumed during the same time period.	404	
					9. The system **SHOULD** check for drug-lab interactions, to indicate to the prescriber that certain lab test results may be impacted by a patient's drugs.	405	
					10. The system **SHOULD** provide the ability to check medications against a list of drugs noted to be ineffective for the patient in the past.	406	
					11. The system **SHOULD** identify contraindications between a drug and patient conditions at the time of medication ordering.	407	
					12. The system **SHOULD** identify contraindications between maternal medications and breastfeeding.		
DC.2.3.1.2	**F**	Support for Patient Specific Dosing and Warnings	**Statement**: Identify and present appropriate dose recommendations based on known patient- conditions and characteristics at the time of medication ordering. **Description**: The clinician is alerted to drug-condition interactions and 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, Ht, Wt, BSA, shall also be incorporated.	DC.2.3.1.1 IN.6	1. The system **SHALL** provide the ability to identify an appropriate drug dosage range, specific for each known patient condition and parameter at the time of medication ordering.	408	
					2. The system **SHALL** provide the ability to automatically alert the provider if contraindications to the ordered dosage range are identified.	409	
					3. The system **SHALL** provide the ability for the provider to override a drug dosage warning.	410	
					4. The system **SHALL** provide the ability to document reasons for overriding a drug alert or warning at the time of ordering.	411	
					5. The system **SHOULD** transmit documented reasons for overriding a drug alert to the pharmacy to enable communication between the clinician and the pharmacist.	412	
					6. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	413	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					7. IF the maximum daily doses are known, THEN the system **SHALL** apply the maximum dose per day in dosing decision support.	414	
					8. The system **SHALL** compute drug doses, based on appropriate dosage ranges, using the patient's body weight.	415	
					9. The system **SHOULD** compute drug doses, based on appropriate dosage ranges, using the patient's body surface area and ideal body weight.		
					10. The system **SHALL** provide the ability to specify an alternative "dosing weight" for the purposes of dose calculation.	416	
					11. The system **SHALL** perform drug dosage functions using any component of a combination drug (e.g., acetaminophen-hydrocodone).	417	
					12. The system **SHALL** provide the ability to record the factors used to calculate the future dose for a given prescription.	418	
					13. The system **SHALL** provide the ability to automatically alert the provider to missing or invalid data required to compute a dose.		
					14. The system **MAY** provide the ability to automatically alert the provider when no recommended pediatric drug dosing is available.		
					15. The system **SHOULD** provide the ability to express prescriptions in the volume of the liquid drug to be administered.		
					16. The system **MAY** support drug dosing based on custom compounded medications (e.g. in the case where no oral solution is available in standard formularies).		
					17. IF the system calculates a value that affects drug dosing recommendations (e.g. Creatinine Clearance) THEN the system SHOULD indicate the formula used for the calculation.		
					18. The system SHALL provice decision support for drug dosing that may consider multiple variables including birth weight, actual weight, dosing weight, estimated weight, gestational age, post menstrual age, chronologic age (e.g. day of life), hepatic or renal isufficiency.		
DC.2.3.1.3	**F**	Support for Medication Recommendations	**Statement**: The system should provide recommendations and options in medication and monitoring on the basis of patient diagnosis, cost, local formularies or therapeutic guidelines and protocols.	DC 2.3.1.2	1. The system **SHOULD** conform to function DC 2.3.1.2 (Support for Patient-Specific Dosing and Warnings).	419	
				S.3.3.2	2. The system **SHOULD** present recommendations for medication regimens based on findings related to the patient diagnosis.	420	
			Description: Offer alternative medications on the basis of practice standards (e.g. cost or adherence to guidelines), a generic brand, a different dosage, a different drug, or no drug (watchful waiting). Suggest lab order monitoring as indicated by the medication or the medical condition to be affected by the medication. Support expedited entry of series of medications that are part of a treatment regimen, i.e. renal dialysis, Oncology, transplant medications, etc.	IN.6	3. The system **SHOULD** present alternative treatments in medications on the basis of practice standards, cost, formularies, or protocols.	421	MODIFIED from MAY to SHOULD.
					4. The system **SHOULD** present suggested lab monitoring as appropriate to a particular medication.	422	
					5. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	423	Note: Parent included.
DC.2.3.2	**F**	Support for Medication and Immunization Administration	**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.	DC.1.3.3	1. The system **SHALL** present information necessary to correctly identify the patient and accurately administer medications and immunizations such as patient name, medication name, strength, dose, route and frequency.	424	
				DC.1.7.2	2. The system **SHALL** alert providers to potential administration errors such as wrong patient, wrong drug, wrong dose, wrong route and wrong time as it relates to medication and immunizations administration.	425	
			Description: To reduce medication errors at the time of administration of a medication, the patient is positively identified; checks on the drug, the dose, the route and the time are facilitated. Documentation is a by-product of this checking; administration details and additional patient information, such as injection site, vital signs, and pain assessments, are captured.	DC.1.10.1	3. The system **SHOULD** alert providers to potential medication administration errors at the point of medication administration.	426	
			Access to drug monograph information may be provided to allow providers to check details about a drug and enhance patient education. Workflow for medication administration is supported through prompts and reminders regarding the "window" for timely administration of medications.	DC.2.7.1	4. The system **SHALL** provide the ability to capture all pertinent details of the medication administration including medication name, strength, dose, route, time of administration, exceptions to administration, and administrator of the medication.	427	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				S.1.4.1	5. IF required by the EHR user's scope of practice, THEN the system **SHALL** capture the administrator of the immunization and the immunization information identified in DC.1.8.2 (Manage Immunization Administration), Conformance Criteria #4 (The system **SHALL** provide the ability to capture immunization administration details, including date, type, lot number and manufacturer).	428	
				S.2.2.2	6. The system **MAY** generate documentation of medication or immunization administration as a by-product of verification of patient, medication, dose, route and time.	429	
				S.3.7.1	7. The system **SHOULD** prompt or remind providers regarding the date/time range for timely administration of medications.	430	
				IN.2.3	8. The system **SHALL** suggest alternative administration techniques based on age, developmental stage, weight, physiological status, mental status, educational level, and past physical history of the patient.	431	
				IN.2.4	9. The system **MAY** conform to function DC.2.7.1 (Access Healthcare Guidance) and provide to the ability for a provider to access drug monograph information.	432	
				IN.6	10. The system **SHALL** provide the ability to record vaccine refusal reasons in a discrete field.		
DC.2.4	**H**	Orders, Referrals, Results and Care Management			1. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	433	
					2. The system **SHALL** conform to function IN.2.2 (Auditable Records).	434	
					3. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	435	
DC.2.4.1	**F**	Create Order Set Templates	**Statement**: Create, capture, maintain and display order set templates based on patient data or preferred standards 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 or other criteria. Recommended order sets may be presented based on patient data or other contexts.	DC.1.9.3	1. The system **SHALL** provide the ability to create order set templates.	436	
				S.2.2.2	2. The system **SHALL** provide the ability to maintain order set templates, including version control.	437	
				S.3.7.1	3. The system **MAY** provide the ability to create order set templates from provider input.	438	
				IN.1.1	4. The system **MAY** capture order sets based on patient data that may be provided by the provider or that may be in accordance with preferred standards.	439	
				IN.1.2	5. The system **MAY** provide the ability to create order set templates for known conditions for a particular disease.	440	
				IN.1.3	6. The system **SHALL** present the order set templates to the provider.	441	
				IN.6	7. The system **MAY** record the basis of the practice standards or criteria for the creation of the order set templates.	442	
					8. The system **MAY** provide the ability to relate order set templates to aid decision support for certain diseases.	443	
					9. The system **SHALL** conform to DC.1.7.3 (Manage Order Sets).	444	
DC.2.4.2	**F**	Support for Non-Medication Ordering	**Statement**: Display and request provider validation of information necessary for non-medication orders that make the order pertinent, relevant and resource-conservative at the time of provider order entry. **Description**: Possible order entry support includes, but is not limited to: notification of missing results required for the order, suggested corollary orders, notification of duplicate orders, institution-specific order guidelines, guideline-based orders/order sets, order sets, order reference text, patient diagnosis specific recommendations pertaining to the order. Also, warnings for orders that may be inappropriate or contraindicated for specific patients (e.g. X-rays for pregnant women) are presented. Non-medication orders include orders such as: 〈 supplies such as 4x4's and ACE bandages 〈 non-medical devices such as TTY phones for the hearing impaired 〈 groups of supplies or kits common to an organization	S.3.3.3 IN.6	1. The system **SHALL** identify required order entry components for non-medication orders.	445	
					2. The system **SHALL** present an alert at the time of order entry, if a non-medication order is missing required information.	446	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			〈 simple durable medical equipment (DME) such as crutches or walkers 〈 complex DME such as wheelchairs and hospital beds 〈 therapies and other services that may require a referral and/or an authorization for insurance coverage		3. The system **SHOULD** present an alert via warnings of orders that may be inappropriate or contraindicated for specific patients at the time of provider order entry. 4. The system **SHOULD** conform to function S.3.3.3. (Service Authorizations). 5. The system **SHALL** include data elements that are required for pediatric ordering. (e.g. for radiology or lab orders the age and weight of the child may be required for adequate completion of the order.)	447 448	
DC.2.4.3	**F**	Support for Result Interpretation	**Statement**: Evaluate results and notify provider of results within the context of the patient's healthcare data. **Description**: Possible result interpretations include, but are not limited to: abnormal result evaluation/notification, trending of results (such as discrete lab values), evaluation of pertinent results at the time of provider order entry (such as evaluation of lab results at the time of ordering a radiology exam), evaluation of incoming results against active medication orders.	S.2.2.2 S.3.7.1 IN.2.4 IN.6	1. The system **SHALL** present alerts for a result that is outside of a normal value range. 2. The system **SHOULD** provide the ability to trend results. 3. The system **MAY** provide the ability to evaluate pertinent results at the time of provider order entry (such as evaluation of lab results at the time of ordering a radiology exam). 4. The system **SHALL** present alerts for a result that is outside of age specific normal value ranges.	449 450 451	
DC.2.4.4	**H**	Support for Referrals				452	
DC.2.4.4.1	**F**	Support for Referral Process	**Statement**: Evaluate referrals within the context of a patient's healthcare data. **Description**: When a healthcare referral is made, health information, including pertinent clinical and behavioral health results, demographic and insurance data elements (or lack thereof) are presented to the provider. Standardized or evidence based protocols for appropriate workup prior to referral may be presented.	S.1.3.1a S.1.3.5 S.2.2.2 S.3.3.2 IN.2.4 IN.6	1. The system **SHALL** provide the ability to include clinical and administrative data (e.g. insurance information) as part of the referral process. 2. The system **SHALL** provide the ability to include test and procedure results with a referral. 3. The system **MAY** provide the ability to include standardized or evidence based protocols with the referral. 4. The system **SHOULD** allow clinical, administrative data, and test and procedure results to be transmitted to the referral clinician. 5. The system **SHALL** conform to function S.2.2.1 (Health Record Output). 6. The system **SHALL** provide the ability to include age appropriate data that allows for appropriate referral.	453 454 455 456 457	
DC.2.4.4.2	**F**	Support for Referral Recommendations	**Statement**: Evaluate patient data and recommend that a patient be referred based on the specific patient's healthcare data. **Description**: Entry of specific patient conditions may lead to recommendations for referral e.g. for smoking cessation counseling if the patient is prescribed a medication to support cessation screening or assessment for behavioral health conditions.	S.3.7.1 IN.6	1. The system **SHALL** present recommendations for potential referrals based on diagnosis(es). 2. The system **SHALL** present recommendations for potential referrals based on patient condition (e.g. for smoking cessation counseling if the patient is prescribed a medication to support cessation). 3. The system **SHOULD** conform to IN.1.4 (Patient Access Management).	458 459 460	
DC.2.4.5	**H**	Support for Care Delivery				461	
DC.2.4.5.1	**F**	Support for Safe Blood Administration	**Statement**: Provide checking in real-time for potential blood administration errors. **Description**: To reduce errors at the time of blood product administration, the patient is positively identified. Additionally, checks on blood product identification, amount to be delivered, route and time of administration are captured, and alerts are provided as appropriate.	DC.1.10.2 S.1.2 S.2.2.1 IN.6	1. The system **SHALL** present 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. 2. The system **SHALL** capture validation of the correct matching of the patient to the blood product. 3. The system **SHALL** capture the blood product number, amount, route and time of administration. 4. The system **SHALL** conform to function DC.1.8.4 (Manage Patient Clinical Measurements) and capture the blood pressure, temperature, pulse, respirations of the patient receiving the product. 5. The system **SHALL** conform to function S.2.2.1 (Health Record Output).	462 463 464 465 466	
DC.2.4.5.2	**F**	Support for Accurate Specimen Collection	**Statement**: Provide checking to ensure accurate specimen collection is supported (e.g. breast milk).	S.1.4.1 S.2.2.1	1. The system **SHALL** provide the ability to present 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,	467	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			Description: To ensure the accuracy of specimen collection, 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.	IN.1.6	means of collection, date and time.		
				IN.1.7			
				IN.1.9	2. The system **SHALL** report variation between the type of specimen order placed and actual specimen received.	468	
				IN.2.3	3. The system **SHALL** capture the details of specimen collection.	469	
				IN.2.4	4. The system **SHALL** conform to function S.2.2.1 (Health Record Output).	470	
				IN.6	5. The system **SHOULD** notify the provider in real-time of a variation between the type of specimen order placed and the actual specimen received.	471	
DC.2.5	**H**	Support for Health Maintenance: Preventive Care and Wellness			1. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	472	
					2. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	473	
					3. The system **SHALL** conform to function IN.2.2 (Auditable Records).	474	
					4. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	475	
DC.2.5.1	**F**	Present Alerts for Preventive Services and Wellness	**Statement**: At the point of clinical decision making, identify patient specific suggestions/reminders, screening tests/exams, and other preventive services in support of routine preventive and wellness patient care standards.	DC.2.5.1	1. The system **SHALL** provide the ability to establish criteria for the identification of preventive care and wellness services based on patient demographics (e.g. age, gender).	476	
				DC.2.5.2	2. The system **SHOULD** provide the ability to modify the established criteria that trigger the alerts.	477	
			Description: At the time of an encounter, the provider or patient is presented with due or overdue activities based on protocols for preventive care and wellness. Examples include but are not limited to, routine immunizations, adult and well child care, age and gender appropriate screening exams, such as PAP smears.	DC.2.6.2	3. The system **SHOULD** present recommended preventative or wellness services needed based upon clinical test results.	478	
			The provider may wish to provide reminders to the patient based on the alert.	IN.6	4. The system **SHALL** present alerts to the provider of all patient specific preventive services that are due.	479	
					5. The system **MAY** provide the ability to produce a list of all alerts along with the scheduled date and time for the preventive service.	480	
					6. The system **MAY** provide the ability to produce a history of all alerts that were generated for the patient in the record.	481	
DC.2.5.2	**F**	Notifications and Reminders for Preventive Services and Wellness	**Statement**: Between healthcare encounters, notify the patient and/or appropriate provider of those preventive services, tests, or behavioral actions that are due or overdue.	S.3.7.2	1. The system **SHOULD** generate timely notifications to patients including services, tests or actions that are due or overdue (e.g. vaccine information sheet, age appropriate counseling).	482	
				S.3.7.4	2. The system **SHOULD** capture a history of notifications.	483	
			Description: The provider can generate notifications to patients regarding activities that are due or overdue and these communications can be captured. 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. E.g. 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.	IN.6	3. The system **SHOULD** provide the ability to track overdue preventive services.	484	
					4. The system **SHOULD** provide notification of overdue preventative services in the patient record.	485	
					5. The system **MAY** provide the ability to configure patient notifications (such as repetitions or timing of the activity).	486	
					6. The system **SHOULD** provide the ability to update content of notifications, guidelines, reminders and associated reference materials.	487	
					7. The system **MAY** provide the ability to manage the lifecycle of the states of the notifications and reminders.	488	
DC.2.6	**H**	Support for Population Health			1. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	489	
					2. The system **SHALL** conform to function IN.2.2 (Auditable Records).	490	
DC.2.6.1	**F**	Support for Epidemiological Investigations of Clinical Health Within	**Statement**: Support 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.	S.1.5	1. The system **SHALL** provide the ability to aggregate patient information based on user-identified criteria.	491	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
		a Population.		S.2.1.1			
			Description: Standardized surveillance performance measures that are based on known patterns of disease presentation can be identified by aggregating data from multiple input mechanisms. For example, elements include, but are not limited to patient demographics, resource utilization, presenting symptoms, acute treatment regimens, laboratory and imaging study orders and results and genomic and proteomic data elements. Identification of known patterns of existing diseases involves aggregation and analysis of these data elements by existing relationships. However, the identification of new patterns of disease requires more sophisticated pattern recognition analysis. Early recognition of new patterns requires data points available early in the disease presentation. Demographics, ordering patterns and resource use (e.g., ventilator or intensive care utilization pattern changes) are often available earlier in the presentation of non-predictable diseases. Consumer-generated information is also valuable with respect to surveillance efforts.	S.2.1.2			
				S.2.2.2	2. The system **SHALL** apply local privacy and confidentially rules when assembling aggregate data to prevent identification of individuals by unauthorized parties.	492	
				S.2.2.3	3. The system **SHOULD** provide the ability to use any demographic or clinical information as criteria for aggregation.	493	
				IN.1.6	4. The system **SHOULD** present aggregate data in the form of reports for external use.	494	
				IN.1.9	5. The system **SHOULD** provide the ability to save report definitions for later use.	495	
				IN.2.2	6. The system **MAY** present aggregate data in an electronic format for use by other analytical programs.	496	
					7. The system **MAY** provide the ability to derive statistical information from aggregate data.	497	
				IN.2.3	8. The system SHOULD support the ability to report device utilization ratios (e.g., ventilator days or central line days) and associated healthcare-associated infectons (e.g., central-line associated bloodstream infections (CLABSIs)) at the patient level to public health agencies and registries.		
				IN.2.4	9. IF biosurveillance or other epidemiological investigations require standardized transmission of data to/from a registry or directory, THEN the system **SHALL** conform to function IN.3 (Registry and Directory Services).	498	
DC.2.6.2	**F**	Support for Notification and Response	**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.	S.1.3.6	1. The system **SHALL** provide the ability to identify individual care providers or care managers within a cared for population.	499	
				S.2.2.2			
			Description: After receiving a notice of a health risk within a cared-for population from public health authorities or other external authoritative sources:	S.3.7.1			
			1. Identify and notify individual care providers or care managers that a risk has been identified and requires attention; and	S.3.7.4			
			2. Provide suggestions on the appropriate course of action.	IN.1.6			
			A care provider now has the ability to decide how patients are notified, if necessary.	IN.1.7			
			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.	IN.2.4			
			A second example might be the dissemination of new care guidelines for elderly patients with a specific chronic disease.	IN.3.1			
			Notifications to clinicians or patients may occur by telephone, email, FAX or other methods.	IN.3.2			
				IN.4.1	2. The system **SHALL** provide the ability to prepare a response notification to the care providers or care managers.	500	
				IN.4.2	3. The system **SHALL** provide the ability to capture notification of a health risk within a cared-for population from public health authorities or other external authoritative sources as either free-text or a structured message.	501	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.4.3	4. The system **SHOULD** provide the ability to coordinate with local and national programs to disseminate notifications of health risk to individual care providers or care-managers.	502	
				IN.5.1	5. The system **SHOULD** provide the ability to notify patients, directly or indirectly, who are described by the health risk alert. The system **SHOULD** support the recording of the date/time of such interactions.	503	MODIFIED.
				IN.5.2	6. The system **SHOULD** present suggestions to the care provider indicating an appropriate course of action.	504	
				IN.5.4	7. The system **SHALL** provide the ability to notify public health authorities or other external authoritative sources of a health risk within a cared for population in accordance with scope of practice, organizational policy and jurisdictional law.	505	
					8. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	506	
DC.2.6.3	**F**	Support for Monitoring Response Notifications Regarding a Specific Patient's Health	**Statement**: In the event of a health risk alert and subsequent notification related to a specific patient, monitor if expected actions have been taken, and execute follow-up notification if they have not. **Description**: Identifies that expected follow-up for a specific patient event (e.g., follow up to error alerts or absence of an expected lab result) has not occurred and communicate the omission to appropriate care providers in the chain of authority. The notification process requires a security infrastructure that provides the ability to match a care provider's clinical privileges with the clinical requirements of the notification.	DC.1.6.1 DC.1.6.2 S.1.3.6 S.1.4.1	1. The system **SHALL** present specific actions to be taken at the patient level for a health risk alert.	507	
				S.2.2.2	2. The system **SHALL** notify appropriate care providers of specific patient actions required by a health risk alert.	508	
				S.2.2.3	3. The system **SHALL** provide the ability to identify those patients who have not received appropriate action in response to a health risk alert.	509	
				S.3.7.4	4. The system **SHOULD** provide the ability to report on the omission of an appropriate response to the health risk alert in specific patients.	510	
				IN.2.4	5. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	511	
				IN.6	6. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	512	
DC.2.7	**H**	Support for Knowledge Access			1. The system **SHOULD** conform to function IN.3 (Registry and Directory Services)	513	
DC.2.7.1	**F**	Access Healthcare Guidance	**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.	S.3.7.1 S.3.7.4 IN.5.1	1. The system **SHALL** provide the ability to access evidence-based healthcare recommendations, with documentation of sources	514	
				IN.5.2	2. The system **SHOULD** provide the ability to access evidenced-based documentation appropriate for the care provider to render a timely judgment.	515	
				IN.5.3	3. The system **MAY** provide the ability to access external evidence-based documentation.	516	
				IN.5.4	4. The system **SHALL** conform to function DC.2.2.1.1 (Support for Standard Care Plans, Guidelines, Protocols).	517	
				IN.6	5. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	518	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
DC.2.7.2	**F**	Patient Knowledge Access	**Statement**: Provide the ability to access reliable information about wellness, disease management, treatments, peer support groups 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.	DC.3.2.4 DC.3.4.9 S.3.7.1 S.3.7.2	1. The system **SHALL** provide the ability to access information about wellness, disease management, treatments, and related information that is relevant for a specific patient.	519	
				S.3.7.4	2. The system **MAY** provide the ability to access information related to a health question directly from data in the health record or other means such as key word search.	520	
				IN.1.4	3. The system **MAY** provide the ability to access patient educational information from external sources.	521	
				IN.5.1	4. IF the information is external-based, THEN the system **MAY** provide the ability to identify links specific to the information.	522	
				IN.5.3	5. The system **SHALL** conform to function IN.1.4 (Patient Access Management).	523	
				IN.5.4	6. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	524	
				IN.6	7. The system **SHALL** conform to function IN.2.2 (Auditable Records).	525	
DC.3	**H**	**Operations Management and Communication**			1. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	526	
					2. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	527	
					3. The system **SHALL** conform to function IN.1.3 (Entity Access Control).	528	
					4. IF the system exchanges data across entity boundaries within an EHR-S or external to an EHR-S, THEN the system **SHALL** conform to function IN.1.6 (Secure Data Exchange) to ensure that the data are protected.	529	
					5. IF the system exchanges data with other sources or destinations of data, THEN the system **SHALL** conform to function IN.1.7 (Secure Data Routing) to ensure that the exchange occurs only among authorized senders and ""receivers".	530	
					6. IF the system is used to enter or modify data in the health record, THEN the system **SHALL** conform to function IN.1.8 (Information Attestation) to show authorship and responsibility for the data.	531	
					7. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	532	
					8. The system **SHALL** conform to function IN.2.1 (Data Retention, Availability and Destruction).	533	
					9. The system **SHALL** conform to function IN.2.2 (Auditable Records).	534	
					10. The system **SHOULD** conform to function IN.2.3 (Synchronization).	535	
					11. IF the system is used to extract data for analysis and reporting, THEN the system **SHALL** conform to function IN.2.4 (Extraction of Health Record Information) to support data extraction across the complete health record of an individual.	536	
					12. IF the system stores unstructured data, THEN the system **SHALL** conform to function IN.2.5.1, (Manage Unstructured Health Record Information), to ensure data integrity through all changes.	537	
					13. IF the system stores structured data, THEN the system **SHALL** conform to function IN.2.5.2 (Manage Structured Health Record Information) to ensure data integrity through all changes.	538	
					14. IF the system processes data for which generally accepted standard terminologies have been established, THEN the system **SHALL** conform to function IN.4.1 (Standard Terminologies and Terminology Models) to support semantic interoperability.	539	
					15. IF the system processes data for which generally accepted standard terminologies have been established, THEN the system **SHALL** conform to function IN.4.2 (Maintenance and Versioning of Standard Terminologies) to preserve the semantics of coded data over time.	540	
					16. The system **SHOULD** conform to function IN.4.3 (Terminology Mapping).	541	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					17. IF the system exchanges data for which generally accepted interchange standards have been established, THEN the system **SHALL** conform to function IN.5.1 (Interchange Standards) to support interoperability.	542	
					18. IF the system exchanges data for which generally accepted interchange standards have been established, THEN the system **SHALL** conform to function IN.5.2 (Interchange Standards Versioning and Maintenance) to accommodate the inevitable evolution of interchange standards.	543	
					19. The system **SHOULD** conform to function IN.5.3 (Standards-based Application Integration).	544	
					20. IF the system exchanges data with other systems outside itself, THEN the system **SHALL** conform to function IN.5.4 (Interchange Agreements) to define how the sender and receiver will exchange data.	545	
					21. The system **SHOULD** conform to function IN.6 (Business Rules Management).	546	
					22. The system **SHOULD** conform to function IN.7 (Workflow Management).	547	
DC.3.1	**H**	Clinical Workflow Tasking	**Statement**: Schedule and manage tasks with appropriate timeliness. **Description**: Since the electronic health record will replace the paper chart, 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. 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. Tasks are time-limited (or finite). 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. Examples of patient related tasks include acknowledgement of receipt of a test result forwarded from the provider, or a request to schedule an appointment for a pap smear (based on age and frequency criteria) generated automatically by the EHR-S on behalf of the provider.			548	
DC.3.1.1	**F**	Clinical Task Assignment and Routing	**Statement**: Assignment, delegation and/or transmission of tasks to the appropriate parties. **Description**: 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. Task creation and assignment may be automated, where appropriate. An example of a system-triggered task is when lab results are received electronically; a task to review the result is automatically generated and assigned to a clinician. 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.	S.1.3.1a S.1.3.5 IN.6	1. The system **SHALL** provide the ability for users to create manual clinical tasks.	549	
					2. The system **SHALL** provide the ability to automate clinical task creation.	550	
					3. The system **SHALL** provide the ability to manually modify and update task status (e.g. created, performed, held, canceled, pended, denied, and resolved).	551	
					4. The system **MAY** provide the ability to automatically modify or update the status of tasks based on workflow rules.	552	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					5. The system **SHOULD** provide the ability to assign, and change the assignment of, tasks to individuals or to clinical roles.	553	
					6. The system **MAY** provide the ability to manage workflow task routing to multiple individuals or roles in succession and/or in parallel.	554	
					7. The system **MAY** provide the ability to prioritize tasks based on urgency assigned to the task.	555	
					8. The system **MAY** provide the ability to restrict task assignment based on appropriate role as defined by the entity.	556	
					9. The system **MAY** provide the ability to escalate clinical tasks as appropriate to ensure timely completion.	557	
					10. IF the system is used to enter, modify, or exchange data, THEN the system **SHALL** conform to IN.1.5 (Non-Repudiation) to guarantee that the sources and receivers of data cannot deny that they entered/sent/received the data.	558	
					11. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	559	
DC.3.1.2	**F**	Clinical Task Linking	**Statement**: Linkage of tasks to 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. For example, this may include a patient location in a facility, a patient's contact information, or a link to new lab results in the patient's EHR. 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. Other examples of tasks might involve fulfillment of orders or responding to patient phone calls.	S.1.3.1 S.1.4.1 S.1.4.2 S.1.4.4 S.1.6 S.1.7 IN.2.3 IN.7	1. The system **SHALL** provide the ability to link a clinical task to the component of the EHR required to complete the task.	560	
					2. The system **SHALL** conform to function IN.1.5 (Non-Repudiation).	561	
DC.3.1.3	**F**	Clinical Task Tracking	**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 and track un-disposed tasks, current work lists, the status of each task, unassigned tasks or 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 to show test results that have not been reviewed by the ordering provider based on an interval appropriate to the care setting.	S.2.2.2 S.2.2.3 IN.2.4 IN.7	1. The system **SHALL** provide the ability to track the status of tasks.	562	
					2. The system **SHALL** provide the ability to notify providers of the status of tasks.	563	
					3. The system **SHOULD** provide the ability to sort clinical tasks by status.	564	
					4. The system **MAY** provide the ability to present current clinical tasks as work lists.	565	
					5. The system **SHOULD** provide the ability to define the presentation of clinical task lists.	566	
					6. IF the system is used to enter, modify, or exchange data, THEN the system **SHALL** conform to IN.1.5 (Non-Repudiation) to guarantee that the sources and receivers of data cannot deny that they entered/sent/received the data.	567	
					7. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	568	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
DC.3.2	**H**	Support Clinical Communication	**Description**: Healthcare requires secure communications among various participants: patients, doctors, nurses, chronic disease care managers, pharmacies, laboratories, payers, consultants, and etcetera. 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 will eventually change the way participants collaborate and distribute the work of patient care.		1. The system **SHOULD** conform to function IN.3 (Registry and Directory Services).	569	
DC.3.2.1	**F**	Support for Inter-Provider Communication	**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 federal or jurisdictional law. **Description**: Communication among providers involved in the care process can range from real time communication (for example, fulfillment of an injection while the patient is in the exam room), to asynchronous communication (for example, 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 limited to consults, and referrals as well as possible exchanges within the office as part of the provision and administration of patient care (for example, 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.	DC.1.1.3 DC.1.9.5 S.1.3.1a S.1.3.2 S.1.3.3 S.1.3.4 S.2.2.2 IN.1.5 IN.1.6 IN.1.7	1. The system **SHALL** provide the ability to document in the patient record verbal/telephone communication between providers.	570	
				IN.1.9	2. The system **SHALL** provide the ability to incorporate scanned documents from external providers into the patient record.	571	
				IN.2.2.	3. The system **MAY** provide the ability to communicate using real-time messaging.	572	
				IN.3.1	4. The system **SHOULD** provide the ability to communicate clinical information (e.g. referrals) via email or other electronic means.	573	
				IN.5.1	5. The system **MAY** provide the ability to transmit electronic multi-media data types representing pictures, sound clips, or video as part of the patient record.	574	
				IN.5.2	6. The system **SHALL** conform to function IN.1.5 (Non-Repudiation).	575	
DC.3.2.2	**F**	Support for Provider - Pharmacy Communication	**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.	S.3.7.1 IN.1.5	1. The system **SHALL** conform to function DC.1.7.1 (Manage Medication Orders) and provide the ability to order medications.	576	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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. The transmission of prescription data between systems should conform to realm acceptable messaging standards. As an example, specific standards in the United States include the most recent versions of criteria from Health Level 7 (HL7), X12N, and/or the National Council for Prescription Drug Programs (NCPDP); and those of the National Electronic Claims Standard (NeCST) in Canada. It is anticipated that other realms may list other acceptable messaging standards.	IN.1.6 IN.1.7 IN.1.9 IN.2.2 IN.3.1 IN.4.1 IN.4.2			
				IN.4.3	2. The system **SHALL** electronically communicate orders between the prescriber, provider and pharmacy, as necessary, to initiate, change, or renew a medication order.	577	
				IN.5.1	3. The system **SHALL** receive any acknowledgements, prior authorizations, renewals, inquiries and fill notifications provided by the pharmacy or other participants in the electronic prescription and make it available for entry in the patient record.	578	
				IN.5.2	4. The system **SHOULD** provide the ability to electronically communicate current realm-specific standards to pharmacies.	579	
				IN.5.3	5. The system **MAY** provide the ability for providers and pharmacies to communicate clinical information via e-mail or other electronic means, on both general and specific orders.	580	
				IN.5.4	6. The system **MAY** provide the ability to use secure real-time messaging.	581	
				IN.6	7. The system **MAY** provide the ability to include workflow tasks as part of communication to the provider.	582	
				IN.7	8. IF the system is used to enter, modify, or exchange data, THEN the system **SHALL** conform to IN.1.5 (Non-Repudiation) to guarantee that the sources and receivers of data cannot deny that they entered/sent/received the data.	583	
DC.3.2.3	**F**	Support for Communications Between Provider and Patient and/or the Patient Representative	**Statement**: Facilitate communications between providers and patients and/or the patient representatives. **Description**: Providers are able to communicate with patients and others, capturing 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.	DC.1.1.3 DC.1.11.3 S.1.3.6 S.1.4.1 S.3.5.1 S.3.5.3 S.3.5.4	1. The system **SHALL** provide the ability to capture documentation of communications between providers and patients and/ or the patient representatives.	584	
				S.3.7.1	2. The system **SHALL** provide the ability to incorporate scanned documents.	585	
				S.3.7.2	3. The system **SHALL** provide the ability to document communication originating with the patient or patient representative (e.g. date, entity, details of communication).	586	
				S.3.7.3	4. The system **SHOULD** provide the ability to communicate between providers and patients or their representative using a secure internet connection.	587	
				S.3.7.4	5. The system **SHALL** provide the ability to manage documentation regarding family member or patient representative authorizations to receive patient related health information.	588	
				IN.1.5	6. The system **SHOULD** alert providers to the presence of patient or patient representative originated communications.	589	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.1.6	7. The system **SHOULD** provide the ability to alert patients or patient representative to provider absences (e.g. vacations) and recommend rerouting of the information or request.	590	
				IN.1.7	8. The system **MAY** provide the ability to notify providers of events and new treatment options.	591	
				IN.1.9	9. The system **MAY** provide the ability to remind the patient or patient representative of events related to their care (e.g. upcoming appointments) as agreed upon by the patient and/or the patient representative.	592	
				IN.2.2	10. The system **SHALL** conform to function IN.1.4 (Patient Access Management).	593	
				IN.6	11. IF the system is used to enter, modify, or exchange data, THEN the system **SHALL** conform to IN.1.5 (Non-Repudiation) to guarantee that the sources and receivers of data cannot deny that they entered/sent/received the data.	594	
DC.3.2.4	**F**	Patient, Family and Care Giver Education	**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.	DC.2.1.4 DC 3.2.3 S.3.5.1	1. The system **SHALL** provide the ability to access to a library of educational material for health concerns, conditions, and/or diagnosis. 2. The system **SHALL** provide the ability to communicate applicable educational materials to the patient and/or patient representative.	595 596	
				S.3.5.3	3. The system **SHOULD** provide the ability to deliver multilingual educational material.	597	
				S.3.5.4	4. The systems **MAY** provide the ability to deliver patient educational materials using alternative modes to accommodate patient sensory capabilities.	598	
				S.3.7.1	5. The system **MAY** provide the ability to access to external educational materials.	599	
				S.3.7.2	6. The system **MAY** provide the ability to use rules-based support to identify the most pertinent educational material, based on the patient health status, condition and/or diagnosis.	600	
				S.3.7.4	7. The system **SHOULD** provide the ability to document who received the educational material provided, the patient, or the patient representative.	601	
				IN.1.4	8. The system **MAY** provide the ability to document that the educational material was reviewed with the patient and/or patient representative and their comprehension of the material.	602	
				IN.1.6	9. The system **SHOULD** provide the ability to identify age-appropriate and/or reading-ability appropriate educational materials for the patient and/or patient representative.	603	
				IN.1.7	10. The system **MAY** provide the ability for direct access to the educational material available, by patients and/or patient representatives.	604	
				IN.1.9	11. The system **SHALL** conform to function IN.1.4 (Patient Access Management).	605	
				IN.2.2	12. IF the system is used to enter, modify, or exchange data, THEN the system **SHALL** conform to IN.1.5 (Non-Repudiation) to guarantee that the sources and receivers of data cannot deny that they entered/sent/received the data.	606	
DC.3.2.5	**F**	Communication with Medical Devices	**Statement**: Support communication and presentation of data captured from medical devices. **Description**: Communication with medical devices is supported as appropriate to the care setting such as an office or a patient's home. Examples include: vital signs/pulse-oximeter, anesthesia machines, home diagnostic devices for chronic disease management, laboratory machines, bar coded artifacts (medicine, immunizations, demographics, history, and identification), etc.	IN.1.1 IN.1.2 IN.1.3 IN.1.6 IN.1.7 IN.1.9	1. The system **SHALL** provide the ability to collect accurate electronic data from medical devices according to realm-specific applicable regulations and/or requirements.	607	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.4.1 IN.4.2 IN.4.3 IN.5.1 IN.5.2			
					2. The system **SHOULD** support device integration with infusion pumps and ventilatory support devices.		
				IN.5.3	3. The system **SHOULD** provide the ability to present information collected from medical devices as part of the medical record as appropriate.	608	
				IN.7	4. The system **SHOULD** conform to function IN.1.4 (Patient Access Management).	609	

Child Health Neonatology Functional Profile: Information Infrastructure Functions

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Row #	Reference/Comments
IN.1	H	Security	**Statement:** Secure the access to an EHR-S and EHR information. Manage the sets of access control permissions granted within an EHR-S. Prevent unauthorized use of data, data loss, tampering and destruction. **Description:** To enforce security, all EHR-S applications must adhere to the rules established to control access and protect the privacy of EHR information. Security measures assist in preventing unauthorized use of data and protect against loss, tampering and destruction. An EHR-S must be capable of including or interfacing with standards-conformant security services to ensure that any Principal (user, organization, device, application, component, or object) accessing the system or its data is appropriately authenticated, authorized and audited in conformance with local and/or jurisdictional policies. An EHR-S should support Chains of Trust in respect of authentication, authorization, and privilege management, either intrinsically or by interfacing with relevant external services.			1	
IN.1.1	F	Entity Authentication	**Statement:** Authenticate EHR-S users and/or entities before allowing access to an EHR-S. **Description:** Both users and applications are subject to authentication. The EHR-S must provide mechanisms for users and applications to be authenticated. Users will have to be authenticated when they attempt to use the application, the applications must authenticate themselves before accessing EHR information managed by other applications or remote EHR-S'. In order for authentication to be established a Chain of Trust agreement is assumed to be in place. Examples of entity authentication include: - username/ password - digital certificate - secure token - biometrics		1. The system **SHALL** authenticate principals prior to accessing an EHR-S application or EHR-S data.	2	
					2. The system **SHALL** prevent access to EHR-S applications or EHR-S data to all non-authenticated principals.	3	
					3. The system **SHOULD** provide the ability to implement a Chain of Trust agreement.	4	
					4. IF other appropriate authentication mechanisms are absent, THEN the system SHALL authenticate principals using at least one of the following authentication mechanisms: username/password, digital certificate, secure token or biometrics.	5	
IN.1.2	F	Entity Authorization.	**Statement:** Manage the sets of access-control permissions granted to entities that use an EHR-S (EHR-S Users).	IN.1.3 S.1.3.1	1. The system **SHALL** provide the ability to create and update sets of access-control permissions granted to principals.	6	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			Enable EHR-S security administrators to grant authorizations to users, for roles, and within contexts. A combination of these authorization categories may be applied to control access to EHR-S functions or data within an EHR-S, including at the application or the operating system level. **Description:** EHR−S Users are authorized to use the components of an EHR-S according to their identity, role, work-assignment, location and/or the patient's present condition and the EHR−S User's scope of practice within a legal jurisdiction. - User based authorization refers to the permissions granted or denied based on the identity of an individual. An example of User based authorization is a patient defined denial of access to all or part of a record to a particular party for privacy related reasons. Another user based authorization is for a tele-monitor device or robotic access to an EHR-S for prescribed directions and other input. - Role based authorization refers to the responsibility or function performed in a particular operation or process. Example roles include: an application or device (tele-monitor or robotic); or a nurse, dietician, administrator, legal guardian, and auditor. - Context-based Authorization is defined by ISO 10181-3 Technical Framework for Access Control Standard as security-relevant properties of the context in which an access request occurs, explicitly time, location, route of access, and quality of authentication. For example, an EHR-S might only allow supervising providers' context authorization to attest to entries proposed by residents under their supervision. In addition to the ISO standard, context authorization for an EHR-S is extended to satisfy special circumstances such as, work assignment, patient consents and authorizations, or other healthcare-related factors. A context-based example is a patient-granted authorization to a specific third party for a limited period to view specific EHR records. Another example is a right granted for a limited period to view those, and only those, EHR records connected to a specific topic of investigation.				
					2. The system **SHALL** conform to function IN.2.2 (Auditable Records) for the purpose of recording all authorization actions.	7	
					3. The system **SHALL** provide EHR−S security administrators with the ability to grant authorizations to principals according to scope of practice, organizational policy, or jurisdictional law.	8	
					4. The system **SHALL** provide EHR−S security administrators with the ability to grant authorizations for roles according to scope of practice, organizational policy, or jurisdictional law.	9	
					5. The system **SHALL** provide EHR−S security administrators with the ability to grant authorizations within contexts according to scope of practice, organizational policy, or jurisdictional law.	10	
					6. The system **MAY** provide the ability to define context for the purpose of principal authorization based on identity, role, work assignment, present condition, location, patient consent, or patient's present condition.	11	
					7. The system **MAY** provide the ability to define context based on legal requirements or disaster conditions.	12	
IN.1.3	**F**	Entity Access Control	**Statement:** Verify and enforce access control to all EHR-S components, EHR information and functions for end-users, applications, sites, etc., to prevent unauthorized use of a resource. **Description:** Entity Access Control is a fundamental function of an EHR-S. To ensure that access is controlled, an EHR-S must perform authentication and authorization of users or applications for any operation that requires it and enforce the system and information access rules that have been defined.		1. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	13	
					2. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	14	
					3. The system **SHALL** provide the ability to define system and data access rules.	15	
					4. The system **SHALL** enforce system and data access rules for all EHR-S resources (at component, application, or user level, either local or remote).	16	
IN.1.4	**F**	Patient Access Management	**Statement:** Enable a healthcare delivery organization to allow and manage a patient's access to the patient's personal health information.		1. The system **SHALL** conform to function IN.1.3 (Entity Access Control) in order for a healthcare delivery organization to manage a patient's access to his or her healthcare information.	17	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			Description: A healthcare delivery organization will be able to manage a patient's ability to view his or her EHR based on scope of practice, organization policy or jurisdictional law. Typically, a patient has the right to view his or her EHR and the right to place restrictions on who can view parts or the whole of that EHR. For example, in some jurisdictions, minors have the right to restrict access to their data by parents/guardians. One example of managing a patient's access to his or her data is by extending user access controls to patients.				
IN.1.5	F	Non-Repudiation	**Statement:** Limit an EHR-S user's ability to deny (repudiate) the origination, receipt, or authorization of a data exchange by that user. **Description:** An EHR-S allows data entry and data access to a patient's electronic health record and it can be a sender or receiver of healthcare information. Non repudiation guarantees that the source of the data record can not later deny that it is the source; that the sender or receiver of a message cannot later deny having sent or received the message. For example, non-repudiation may be achieved through the use of a: - Digital signature, which serves as a unique identifier for an individual (much like a written signature on a paper document). - Confirmation service, which utilizes a message transfer agent to create a digital receipt (providing confirmation that a message was sent and/or received) and - Timestamp, which proves that a document existed at a certain date and time. Date and Time stamping implies the ability to indicate the time zone where it was recorded (time zones are described in ISO 8601 Standard Time Reference).		1. The system **SHALL** time stamp initial entry, modification, or exchange of data, and identify the actor/principal taking the action as required by users' scope of practice, organizational policy, or jurisdictional law.	18	
					2. The system **SHALL** provide additional non-repudiation functionality where required by users' scope of practice, organizational policy, or jurisdictional law.	19	
					3. The system **MAY** conform to function IN.2.2 (Auditable Records) to prevent repudiation of data origination, receipt, or access.	20	
					4. The system **MAY** conform to function IN.1.8 (Information Attestation) to ensure the integrity of data exchange and thus prevent repudiation of data origination or receipt.	21	
IN.1.6	F	Secure Data Exchange	**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. A secure data exchange requires that there is an overall coordination regarding the information that is exchanged between EHR-S entities and how that exchange is expected to occur. The policies applied at different locations must be consistent or compatible with each other in order to ensure that the information is protected when it crosses entity boundaries within an EHR-S or external to an EHR-S.	IN.1.1 IN.2.2	1. The system **SHALL** secure all modes of EHR data exchange.	22	
					2. The system **SHOULD** conform to function IN.1.7 (Secure Data Routing).	23	
					3. The system **MAY** provide the ability to obfuscate data.	24	
					4. The system **SHALL** encrypt and decrypt EHR data that is exchanged over a non-secure link.	25	
					5. The system **SHALL** support standards-based encryption mechanisms when encryption is used for secure data exchange.	26	
IN.1.7	F	Secure Data Routing	**Statement:** Route electronically exchanged EHR data only to/from known, registered, and authenticated destinations/sources (according to applicable healthcare-specific rules and relevant standards).	IN.1.1 IN.1.2	1. The system **SHALL** automatically route electronically exchanged EHR data only from and to known sources and destinations and only over secure networks.	27	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.1.1. For example, the sending of a lab order from the EHRS to a lab system within the same organization usually uses a simple static setup for routing. In contrast sending a lab order to a reference lab outside of the organization will involve some kind of authentication process.		2. The system **SHOULD** route electronically exchanged EHR data only to and from authenticated sources and destinations (conform to function IN.1.1 (Entity Authentication)).	28	
			In general, when the underlying network infrastructure is secure (e.g. secure LAN or VPN) the simple static setup is used.		3. The system **SHOULD** conform to function IN.2.2 (Auditable Records) to provide audit information about additions and changes to the status of destinations and sources.	29	
IN.1.8	**F**	Information Attestation	**Statement:** Manage electronic attestation of information including the retention of the signature of attestation (or certificate of authenticity) associated with incoming or outgoing information.		1. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	30	
					2. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	31	
			Description: The purpose of attestation is to show authorship and assign responsibility for an act, event, condition, opinion, or diagnosis. Every entry in the health record must be identified with the author and should not be made or signed by someone other than the author. (Note: A transcriptionist may transcribe an author's notes and a senior clinician may attest to the accuracy of another's statement of events.) Attestation is required for (paper or electronic) entries such as narrative or progress notes, assessments, flow sheets, and orders. Digital signatures may be used to implement document attestation. For an incoming document, the record of attestation is retained if included. Attestation functionality must meet applicable legal, regulatory and other applicable standards or requirements.		3. The system **SHALL** provide the ability to associate any attestable content added or changed to an EHR with the content's author (for example by conforming to function IN.2.2 (Auditable Records).	32	
					4. The system **SHALL** provide the ability for attestation of attestable EHR content by the content's author.	33	
					5. The system **SHALL** indicate the status of attestable data which has not been attested.	34	
					6. The system **MAY** provide the ability for attestation of EHR content by properly authenticated and authorized users different from the author as required by users' scope of practice, organizational policy, or jurisdictional law.	35	
					7. The system **MAY** provide the ability to use digital signatures as the means for attestation.	36	
IN.1.9	**F**	Patient Privacy and Confidentiality	**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.	IN.6	1. The system **SHALL** provide the ability to fully comply with the requirements for patient privacy and confidentiality in accordance with a user's scope of practice, organizational policy, or jurisdictional law.	37	
					2. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	38	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.		3. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	39	
					4. The system **SHALL** conform to function IN.1.3 (Entity Access Control).	40	
					5. The system **SHOULD** conform to function IN.1.5 (Non-Repudiation).	41	
					6. The system **SHOULD** conform to function IN.1.6 (Secure Data Exchange).	42	
					7. The system **SHOULD** conform to function IN.2.2 (Auditable Records).	43	
					8. The system **SHALL** provide the ability to maintain varying levels of confidentiality in accordance with users' scope of practice, organizational policy, or jurisdictional law.	44	
					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 scope of practice, organizational policy or jurisdictional law (e.g. by age and clinical situation, adoption-related instances).	45	
					10. The system **SHALL** provide the ability to override a mask in emergency or other specific situations according to scope of practice, organizational policy or jurisdictional law.	46	
IN.2	**H**	Health Record Information and Management	**Statement:** Manage EHR information across EHR-S applications by ensuring that clinical information entered by providers is a valid representation of clinical notes; and is accurate and complete according to clinical rules and tracking amendments to clinical documents. Ensure that information entered by or on behalf of the patient is accurately represented. **Description:** Since EHR information will typically be available on a variety of EHR-S applications, an EHR-S must provide the ability to access, manage and verify accuracy and completeness of EHR information, maintain the integrity and reliability of the data, and provide the ability to audit the use of and access to EHR information.			47	
IN.2.1	**F**	Data Retention, Availability and Destruction	**Statement:** Retain, ensure availability, and destroy health record information according to scope of practice, organizational policy, or jurisdictional law. This includes: -Retaining all EHR-S data and clinical documents for the time period designated by policy or legal requirement; -Retaining inbound documents as originally received (unaltered); -Ensuring availability of information for the legally prescribed period of time to users and patients; and -Providing the ability to destroy EHR data/records in a systematic way according to policy and after the legally prescribed retention period. **Description:** Discrete and structured EHR-S data, records and reports must be: -Made available to users in a timely fashion; -Stored and retrieved in a semantically intelligent and useful manner (for example, chronologically, retrospectively per a given disease or event, or in accordance with business requirements, local policies, or legal requirements); -Retained for a legally prescribed period of time; and	IN.1.7	1. The system **SHALL** provide the ability to store and retrieve health record data and clinical documents for the legally prescribed time.	48	
					2. The system **SHALL** provide the ability to retain inbound data or documents (related to health records) as originally received (unaltered, inclusive of the method in which they were received) for the legally organizationally prescribed time in accordance with users' scope of practice, organizational policy, or jurisdictional law.	49	
					3. The system **SHALL** retain the content of inbound data (related to health records) as originally received for the legally prescribed time.	50	
					4. The system **SHOULD** provide the ability to retrieve both the information and business context data within which that information was obtained.	51	
					5. The system **SHOULD** provide the ability to retrieve all the elements included in the definition of a legal medical record.	52	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			-Destroyed in a systematic manner in relation to the applicable retention period.		6. The system **MAY** provide the ability to identify specific EHR data/records for destruction, review and confirm destruction before it occurs and implement function IN.2.2 (Auditable Records).	53	
					7. The system **MAY** provide the ability to destroy EHR data/records so that all traces are irrecoverably removed according to policy and legal retentions periods.	54	
			An EHR-S must also allow an organization to identify data/records to be destroyed, and to review and approve destruction before it occurs. In such a case it should pass along record destruction date information along with existing data when providing records to another entity.		8. The system **SHOULD** pass along record destruction date information (if any) along with existing data when providing records to another entity.	55	
IN.2.2	**F**	Auditable Records	**Statement:** Provide audit capabilities for system access and usage indicating the author, the modification (where pertinent), and the date and time at which a record was created, modified, viewed, extracted, or deleted. Date and Time stamping implies the ability to indicate the time zone where it was recorded (time zones are described in ISO 8601 Standard Time Reference). Auditable records extend to information exchange, to audit of consent status management (to support DC.1.3.3) and to entity authentication attempts. Audit functionality includes the ability to generate audit reports and to interactively view change history for individual health records or for an EHR-S.		1. The system **SHALL** provide audit capabilities for recording access and usage of systems, data, and organizational resources.	56	
					2. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	57	
			Description: Audit functionality extends to security audits, data audits, audits of data exchange, and the ability to generate audit reports. Audit capability settings should be configurable to meet the needs of local policies. Examples of audited areas include:		3. The system **SHALL** provide audit capabilities indicating the time stamp for an object or data creation.	58	
					4. The system **SHALL** provide audit capabilities indicating the time stamp for an object or data modification in accordance with users' scope of practice, organizational policy, or jurisdictional law.	59	
			- Security audit, which logs access attempts and resource usage including user login, file access, other various activities, and whether any actual or attempted security violations occurred		5. The system **SHALL** provide audit capabilities indicating the time stamp for an object or data extraction in accordance with users' scope of practice, organizational policy, or jurisdictional law.	60	
					6. The system **SHALL** provide audit capabilities indicating the time stamp for an object or data exchange.	61	
			- Data audit, which records who, when, and by which system an EHR record was created, updated, translated, viewed, extracted, or (if local policy permits) deleted. Audit-data may refer to system setup data or to clinical and patient management data		7. The system **SHOULD** provide audit capabilities indicating the time stamp for an object or data view.	62	
					8. The system **SHALL** provide audit capabilities indicating the time stamp for an object or data deletion in accordance with users' scope of practice, organizational policy, or jurisdictional law.	63	
			- Information exchange audit, which records data exchanges between EHR-S applications (for example, sending application; the nature, history, and content of the information exchanged); and information about data transformations (for example, vocabulary translations, reception event details, etc.)		9. The system **SHALL** provide audit capabilities indicating the author of a change in accordance with users' scope of practice, organizational policy, or jurisdictional law.	64	
					10. The system **SHALL** provide audit capabilities indicating the viewer of a data set.	65	
			- Audit reports should be flexible and address various users' needs. For example, a legal authority may want to know how many patients a given healthcare provider treated while the provider's license was suspended. Similarly, in some cases a report detailing all those who modified or viewed a certain patient record		11. The system **MAY** provide audit capabilities indicating the data value before a change.	66	
					12. The system **MAY** provide audit capabilities to capture system events at the hardware and software architecture level.	67	
			- Security audit trails and data audit trails are used to verify enforcement of business, data integrity, security, and access-control rules		13. The system **SHALL** conform to function IN.1.3 (Entity Access Control) to limit access to audit record information to appropriate entities in accordance with users' scope of practice, organizational policy, or jurisdictional law.	68	
					14. The system **SHALL** provide the ability to generate an audit report.	69	
			-There is a requirement for system audit trails for the following events:		15. The system **SHALL** provide the ability to view change history for a particular record or data set in accordance with users' scope of practice, organizational policy, or jurisdictional law.	70	
			>Loading new versions of, or changes to, the clinical system;		16. The system **SHOULD** provide the ability to record system maintenance events for loading new versions of, or changes to, the clinical system.	71	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			>Loading new versions of codes and knowledge bases; >Taking and restoring of backup; >Changing the date and time where the clinical system allows this to be done; >Archiving any data; >Re-activating of an archived patient record; >Entry to and exiting from the clinical system; >Remote access connections including those for system support and maintenance activities		17. The system **SHOULD** provide the ability to record system maintenance events for loading new versions of codes and knowledge bases.	72	
					18. The system **SHOULD** provide the ability to record changing the date and time where the clinical system allows this to be done.	73	
					19. The system **SHOULD** provide the ability to record system maintenance events for creating and restoring of backup.	74	
					20. The system **SHOULD** provide the ability to record system maintenance events for archiving any data.	75	
					21. The system **SHOULD** provide the ability to record system maintenance events for re-activating of an archived patient record.	76	
					22. The system **SHOULD** provide the ability to record system maintenance events for entry to and exit from the EHR system.	77	
					23. The system **SHOULD** provide the ability to record system maintenance events for remote access connections including those for system support and maintenance activities**.**	78	
					24. The system **SHOULD** utilize standardized time keeping (for example using the IHE consistent time profile).	79	
					25. The system **SHOULD** provide the ability to record and report upon audit information using a standards-based audit record format (for example RFC 3881).	80	
IN.2.3	**F**	Synchronization	**Statement:** Maintain synchronization involving: -Interaction with entity directories; -Linkage of received data with existing entity records; -Location of each health record component; and -Communication of changes between key systems. **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. The patient demographics, 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 view the complete record.		1. The system **SHALL** conform to function IN.5.1 (Interchange Standards).	81	
					2. The system **SHOULD** conform to function IN.3 (Registry and Directory Services) to enable the use of registries and directories.	82	
					3. The system **SHOULD** provide the ability to link entities to external information.	83	
					4. The system **SHOULD** store the location of each known health record component in order to enable authorized access to a complete logical health record if the EHR is distributed among several applications within the EHR-S.	84	
IN.2.4	**F**	Extraction of Health Record Information	**Statement:** Manage data extraction in accordance with 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. **Description:** 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 to patient care coordination between facilities, organizations and settings. In addition, data extractions can be used for administrative, financial, research, quality analysis, and public health purposes.	S.2.2	1. The system **SHALL** provide the ability to extract health record information.	85	
					2. The system **SHOULD** conform to function IN.1.6 (Secure Data Exchange) to provide secure data exchange capabilities.	86	
					3. The system **SHOULD** provide the ability to de-identify extracted information.	87	
					4. The system **SHOULD** conform to function IN.5.1 (Interchange Standards) to enable data extraction in standard-based formats.	88	
					5. The system **SHOULD** provide the ability to perform extraction operations across the complete data set that constitutes the health record of an individual within the system.	89	
					6. The system **MAY** provide the ability to perform extraction operations whose output fully chronicles the healthcare process.	90	
					7. The system **SHOULD** provide the ability to extract data for administrative purposes.	91	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					8. The system **SHOULD** provide the ability to extract data for financial purposes.	92	
					9. The system **SHOULD** provide the ability to extract data for research purposes.	93	
					10. The system **SHOULD** provide the ability to extract data for quality analysis purposes.	94	
					11. The system **SHOULD** provide the ability to extract data for public health purposes.	95	
IN.2.5	**H**	Store and Manage Health Record Information	**Statement:** Store and manage health record information as structured and unstructured data. **Description:** 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) 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. Managing healthcare data includes capture, retrieval, deletion, correction, amendment, and augmentation. Augmentation refers to providing additional information regarding the healthcare data, which is not part of the data itself, e.g. linking patient consents or authorizations to the healthcare data of the patient.			96	
IN.2.5.1	**F**	Manage Unstructured Health Record Information	**Statement:** Create, capture, and maintain unstructured health record information.		1. The system **SHALL** capture unstructured health record information as part of the patient EHR.	97	
					2. The system **SHALL** retrieve unstructured health record information as part of the patient EHR.	98	
					3. The system **SHALL** provide the ability to update unstructured health record information.	99	
					4. The system **SHALL** conform to function IN.2.1 (Data Retention, Availability and Destruction) to provide the ability to inactivate, obsolete, or destroy unstructured health record information.	100	
					5. The system **SHOULD** provide the ability to report unstructured health record information.	101	
					6. The system **MAY** track unstructured health record information over time.	102	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					7. The system **SHALL** provide the ability to append corrected unstructured health record information to the original unstructured health record information. A specific type of implementation is not implied.	103	
					8. The system **SHALL** provide the ability to append unstructured health record information to the original unstructured health record information. A specific type of implementation is not implied.	104	
					9. The system **SHALL** provide the ability to append augmented unstructured health record information to the original unstructured health record information. A specific type of implementation is not implied.	105	
IN.2.5.2	**F**	Manage Structured Health Record Information	**Statement:** Create, capture, and maintain structured health record information. **Description:** 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 Context may determine whether or not data are unstructured, e.g., a progress note might be standardized and structured in some EHRS (e.g., Subjective/Objective/Assessment/Plan) but unstructured in others.		1. The system **SHALL** capture structured health record information as part of the patient EHR.	106	
					2. The system **SHALL** retrieve structured health record information as part of the patient EHR.	107	
					3. The system **SHALL** provide the ability to update structured health record information.	108	
					4. The system **SHALL** conform to function IN.2.1 (Data Retention, Availability and Destruction) to provide the ability to inactivate, obsolete, or destroy structured health record information.	109	
					5. The system **SHOULD** provide the ability to report structured health record information.	110	
					6. The system **MAY** track structured health record information over time.	111	
					7. The system **SHOULD** provide the ability to retrieve each item of structured health record information discretely within patient context.	112	
					8. The system **SHALL** provide the ability to append corrected structured health record information to the original structured health record information. A specific type of implementation is not implied.	113	
					9. The system **SHALL** provide the ability to append structured health record information to the original structured health record information. A specific type of implementation is not implied.	114	
					10. The system **SHALL** provide the ability to append augmented structured health record information to the original structured health record information. A specific type of implementation is not implied.	115	
IN.3	**F**	Registry and Directory Services	**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.		1. The system **SHALL** provide the ability to use registry services and directories.	116	
					2. The system **SHOULD** provide the ability to securely use registry services and directories.	117	
					3. The system **SHALL** conform to function IN.5.1 (Interchange Standards) to provide standard data interchange capabilities for using registry services and directories.	118	
					4. The system **SHOULD** communicate with local registry services through standardized interfaces.	119	
					5. The system **SHOULD** communicate with non-local registry services (that is, to registry services that are external to an EHR-S) through standardized interfaces.	120	
					6. The system **SHOULD** provide the ability to use registries or directories to uniquely identify patients for the provision of care.	121	
					7. The system **SHOULD** provide the ability to use registries or directories to uniquely identify providers for the provision of care.	122	
					8. The system **MAY** provide the ability to use registries or directories to retrieve links to relevant healthcare information regarding a patient.	123	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.		9. The system **MAY** provide the ability to use registries to supply links to relevant healthcare information regarding a patient.	124	
					10. The system **MAY** provide the ability to use registries or directories to identify payers, health plans, and sponsors for administrative and financial purposes.	125	
					11. The system **MAY** provide the ability to use registries or directories to identify employers for administrative and financial purposes.	126	
					12. The system **MAY** provide the ability to use registries or directories to identify public health agencies for healthcare purposes.	127	
					13. The system **MAY** provide the ability to use registries or directories to identify healthcare resources and devices for resource management purposes.	128	
IN.4	**H**	Standard Terminologies and Terminology Services	**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 these items.			129	
IN.4.1	**F**	Standard Terminologies and Terminology Models	**Statement:** Employ 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. Examples of terminologies that an EHR-S may support include: LOINC, SNOMED, ICD-9, ICD-10, and CPT-4. A terminology provides semantic and computable identity to its concepts. Terminologies are use-case dependent and may or may not be realm dependent. 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.		1. The system **SHALL** provide the ability to use standard terminologies to communicate with other systems(internal or external to the EHR-S).	130	
					2. The system **SHALL** provide the ability to validate that clinical terms and coded clinical data exists in a current standard terminology.	131	
					3. The system **SHOULD** provide the ability to exchange healthcare data using formal standard information models and standard terminologies.	132	
					4. The system **SHOULD** provide the ability to use a formal standard terminology model.	133	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.		5. The system **SHOULD** provide the ability to use hierarchical inference searches e.g., subsumption across coded terminology concepts that were expressed using standard terminology models.	134	
					6. The system **SHOULD** provide the ability to use a terminology service (internal or external to the EHR-S).	135	
			Clinical and other terminologies may be provided through a terminology service internal or external to an EHR-S. An example of a terminology service is described in the HL7 Common Terminology Services specification.		7. IF there is no standard terminology model available, THEN the system **MAY** provide a formal explicit terminology model.	136	
IN.4.2	**F**	Maintenance and Versioning of Standard Terminologies	**Statement:** Enable version control according to customized policies to ensure maintenance of utilized standards.		1. The system **SHALL** provide the ability to use different versions of terminology standards.	137	
					2. The system SHOULD support current HL7 V3 messaging standards such as SNOMED-CT, LOINC, and RxNorm,		Supports Meaningful Use Stage 1 - CCD and Meaningful use Stage 2 - CDA standards. http://www.hl7.org/implement/standards/product_brief.cfm?product_id=258
			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 local policy.		3. The system **SHALL** provide the ability to update terminology standards.	138	
					4. The system **SHOULD** relate modified concepts in the different versions of a terminology standard to allow preservation of interpretations over time.	139	
			Description: Version control allows for multiple sets or versions of the same terminology to exist and be distinctly recognized over time.		5. The system **SHOULD** provide the ability to interoperate with systems that use known different versions of a terminology standard.	140	
			Terminology standards are usually periodically updated, and concurrent use of different versions may be required. Since the meaning of a concept can change over time, it is important that retrospective analysis and research maintains the ability to relate changing conceptual meanings. If the terminology encoding for a concept changes over time, it is also important that retrospective analysis and research can correlate the different encodings to ensure the permanence of the concept. 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.		6. The system **SHOULD** provide the ability to deprecate terminologies.	141	
					7. The system **MAY** provide the ability to deprecate individual codes within a terminology.	142	
			It should be possible to retire deprecated versions when applicable business cycles are completed while maintaining obsolescent code sets. An example use of this is for possible claims adjustment throughout the claim's lifecycle.		8. The system **SHALL** provide the ability to cascade terminology changes where coded terminology content is embedded in clinical models (for example, templates and custom formularies) when the cascaded terminology changes can be accomplished unambiguously.	143	
					9. Changes in terminology **SHALL** be applied to all new clinical content (via templates, custom formularies, etc.).	144	
IN.4.3	**F**	Terminology Mapping	**Statement:** Map or translate one terminology to another as needed by local, regional, national, or international interoperability requirements		1. The system **SHALL** provide the ability to use a terminology map.	145	
			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 with overlapping concepts.				
			It is a common occurrence that data is captured using one terminology, but is shared using another terminology. For example, within a healthcare organization there may be a need to map overlapping terminology concepts (e.g. between an EHRS and an external laboratory system, ore between an EHRS and a billing system).		2. The system **SHOULD** provide the ability to use standard terminology services for the purposes of mapping terminologies.	146	May wish to consider supporting the Neonatal Research Network Terminologies in the National Cancer Institute Thesaurus (NCIt).

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					3. The system **MAY** provide the ability for a user to validate a mapping.	147	
			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 can be used to satisfy these requirements.		4. The system **MAY** provide the ability to create a terminology map.	148	
IN.5	H	Standards-based Interoperability	**Statement:** Provide automated health care delivery processes and seamless exchange of clinical, administrative, and financial information through standards-based solutions. **Description:** Interoperability standards enable an 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.			149	
IN.5.1	F	Interchange Standards	**Statement:** Support the ability to operate seamlessly with other systems, either internal or external, that adhere to recognized interchange standards. "Other systems" include other EHR Systems, applications within an EHR-S, or other authorized entities that interact with an EHR-S. **Description:** An organization typically uses a number of interchange standards to meet its external and internal interoperability requirements. It is fundamental that there be a common understanding of rules regarding connectivity, information structures, formats and semantics. These are known as "interoperability or interchange standards". Data exchange which may be between internal systems or modules, or external to the organization, is to occur in a manner which is seamless to the user. For example, if data interchange involves double entry, or manual cut-and-paste steps by the user, it is not considered seamless. Representation of EHR content is transmitted in a variety of interchange formats such as: HL7 Messages, Clinical Document Architecture (CDA) and other HL7 Structured Documents, X12N healthcare transactions, and Digital Imaging and Communication in Medicine (DICOM) format. 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. a patient has arrived for a clinic appointment -Query/Response e.g., Is Adam Everyman known to the system? Yes, MRN is 12345678. -Service Request and Response, e.g., Laboratory Order for "Fasting Blood Sugar" and a response containing the results of the test. -Information Interchange between organizations (e.g. in a RHIO, or in a National Health System) -Structured/discrete clinical documents, e.g., Clinical Note -Unstructured clinical document, e.g., dictated surgical note		1. The system **SHALL** provide the ability to use interchange standards as required by realm specific and/or local profiles.	150	
					2. The system **SHALL** provide the ability to seamlessly perform interchange operations with other systems that adhere to recognized interchange standards.	151	
					3. The system **SHALL** conform to functions under header IN.4 (Standard Terminologies and Terminology Services) to support terminology standards in accordance with a users' scope of practice, organizational policy, or jurisdictional law.	152	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					4. IF there is no standard information model available, THEN the system **MAY** provide a formal explicit information model in order to support the ability to operate seamlessly with other systems.	153	
			Standard terminology is a fundamental part of interoperability and is described in section IN.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 or a meta-model.		5. The system **SHOULD** provide the ability to exchange data using an explicit and formal information model and standard, coded terminology.	154	
IN.5.2	**F**	Interchange Standards Versioning and Maintenance	**Statement:** Enable version control according to local policies to ensure maintenance of utilized interchange standards. Version control of an interchange standard implementation includes the ability to accommodate changes as the source interchange standard undergoes its natural update process. **Description:** The life cycle of any given standard results in changes to its requirements. It is critical that an organization know the version of any given standard it uses and what its requirements and capabilities are. For example, if the organization migrates to an HL7 v2.5 messaging standard, it may choose to take advantage of new capabilities such as specimen or blood bank information. The organization may 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 Lab 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. An example use of this is the calculation of outcome or performance measures from persisted data stores where one version of a relevant interchange standard, e.g., CDA Release 1 captures the relevant data, e.g., discharge data, differently than CDA Release 2.		1. The system **SHALL** provide the ability to use different versions of interchange standards.	155	
					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.	156	
					3. The system **SHOULD** provide the ability to deprecate an interchange standard.	157	
					4. The system **SHOULD** provide the ability to interoperate with other systems that use known earlier versions of an interoperability standard.	158	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
IN.5.3	F	Standards-based Application Integration	**Statement:** Enable standards-based application integration with other systems. **Description:** When an organization wishes to integrate its applications, they must use standardized methods. Standards-based application integration may be achieved in a variety of ways. For example: -desktop visual integration may be achieved via HL7 Clinical Context Object Workgroup (CCOW) standards -workflow functions may be integrated via The Workflow Management Coalition (WfMC) standards -EHRS may be integrated in an Enterprise Information System Architecture via Service Oriented Architecture (SOA) standards It is recognized that these examples are very disparate and used for very different purposes. The method used depends on the organization's approach to application integration. An organization could conceivably use multiple integration approaches.		1. The system **SHALL** provide the ability to support standards-based application integration.	159	
IN.5.4	F	Interchange Agreements	**Statement:** Support interactions with entity directories to determine the address, profile and data exchange requirements of known and/or potential partners. Use the rules of interaction specified in the partner's interchange agreement when exchanging information. **Description:** Systems that wish to communicate with each other, must agree on the parameters associated with that information exchange. Interchange Agreements allow an EHR-S to describe those parameters/criteria. An EHR-S can use the entity registries to determine the security, addressing, and reliability requirements between partners. An EHR-S can use this information to define how data will be exchanged between the sender and the receiver. Discovery of interchange services and capabilities can be automatic. For example: - A new application can automatically determine a patient demographics source using a Universal Description and Discovery Integration (UDDI) for source discovery, and retrieve the Web Services Description Language (WSDL) specification for binding details. - Good Health Hospital is a member of AnyCounty LabNet, for sharing laboratory results with other partners. Good Health Hospital periodically queries LabNet's directory (UDDI) to determine if additional information providers have joined LabNet. When new information providers are discovered, the Good Health IT establishes the appropriate service connections based upon the Service Description (WSDL).	IN.3	1. The system **SHALL** use interchange agreement descriptions when exchanging information with partners**.**	160	
					2. The system **SHOULD** use interchange agreement description standards (when available).	161	
					3. The system **MAY** conform to function IN.3 (Registry and Directory Services) to interact with entity directories to determine the address, profile and data exchange requirements of known and/or potential partners.	162	
					4. The system **MAY** provide the ability to automatically discover interchange services and capabilities.	163	
IN.6	F	Business Rules Management	**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.	DC.2.2 S.3.1 S.3.7	1. The system **SHALL** provide the ability to manage business rules.	164	
					2. The system **SHOULD** provide the ability to create, import, or access decision support rules to guide system behavior.	165	
					3. The system **SHOULD** provide the ability to update decision support rules.	166	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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. Examples of applied business rules include: - Suggesting diagnosis based on the combination of symptoms (flu-like symptoms combined with widened mediastinum suggesting anthrax); - Classifying a pregnant patient as high risk due to factors such as age, health status, and prior pregnancy outcomes; - Sending an update to an immunization registry when a vaccination is administered; - Limiting access to mental health information to authorized providers; - Establishing system level defaults such as for vocabulary data sets to be implemented.; and - Establishing user level preferences such as allowing the use of health information for research purposes.		4. The system **SHOULD** provide the ability to customize decision support rules and their components.	167	
					5. The system **SHOULD** provide the ability to inactivate, obsolete, or destroy decision support rules.	168	
					6. The system **SHOULD** conform to function IN.2.2 (Auditable Records) to audit all changes to decision support rules.	169	
					7. The system **SHOULD** provide the ability to create diagnostic support rules to guide system behavior.	170	
					8. The system **SHOULD** provide the ability to update diagnostic support rules.	171	
					9. The system **MAY** provide the ability to customize diagnostic support rules and their components.	172	
					10. The system **SHOULD** provide the ability to inactivate, obsolete, or destroy diagnostic support rules.	173	
					11. The system **SHOULD** conform to function IN.2.2 (Auditable Records) to audit all changes to diagnostic support rules.	174	
					12. The system **SHOULD** provide the ability to create workflow control rules to guide system behavior.	175	
					13. The system **SHOULD** provide the ability to update workflow control rules.	176	
					14. The system **MAY** provide the ability to customize workflow control rules and their components.	177	
					15. The system **SHOULD** provide the ability to inactivate, obsolete, or destroy workflow control rules.	178	
					16. The system **SHOULD** conform to function IN.2.2 (Auditable Records) to audit all changes to workflow control rules.	179	
					17. The system **MAY** provide the ability to create access privilege rules to guide system behavior.	180	
					18. The system **MAY** provide the ability to update access privilege rules.	181	
					19. The system **MAY** provide the ability to customize access privilege rules and their components.	182	
					20. The system **MAY** provide the ability to inactivate, obsolete, or destroy access privilege rules.	183	
					21. The system **MAY** conform to function IN.2.2 (Auditable Records) to audit all changes to access privilege rules.	184	
					22. The system **SHOULD** conform to function IN.2.2 (Auditable Records) to audit all changes to other business rules.	185	
					23. The system **SHOULD** support the ability to selectively export business rules.	186	
IN.7	**F**	Workflow Management	**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 **SHOULD** use workflow-related business rules to direct the flow of work assignments.	187	
					2. The system **SHOULD** provide the ability to create workflow (task list) queues.	188	
					3. The system **SHOULD** provide the ability to manage workflow (task list) queues.	189	
					4. The system **MAY** provide the ability to manage human resources (i.e., personnel lists) for workflow queues.	190	
					5. The system **MAY** use system interfaces that support the management of human resources (i.e., personnel lists).	191	
					6. The system **MAY** use system interfaces that support the management of workflow (task lists) queues.	192	
					7. The system **MAY** provide the ability to distribute information to and from internal and external parties.	193	
					8. The system **MAY** provide the ability to route notifications and tasks based on system triggers.	194	
					9. The system **MAY** dynamically escalate workflow according to business rules.	195	
					10. The system **MAY** dynamically redirect workflow according to business rules.	196	
					11. The system **MAY** dynamically reassign workflow according to business rules.	197	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment

Child Health Neonatology Functional Profile: Supportive Functions

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Row #	Reference/Comments
S.1	H	**Clinical Support**			1. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	1	
					2. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	2	
					3. The system **SHALL** conform to function IN.1.3 (Entity Access Control).	3	
S.1.1	F	Registry Notification	**Statement:** Enable the automated transfer of formatted demographic and clinical information to and from local disease specific registries (and other notifiable registries) for patient monitoring and subsequent epidemiological analysis.	IN.2.4, IN.4.1, IN.4.2, IN.5.1, IN.5.2, IN.5.4	1. The system **SHOULD** automatically transfer formatted demographic and clinical information to local disease specific registries (and other notifiable registries).	4	
					2. The system **MAY** provide the ability to automate the retrieval of formatted demographic and clinical information from local disease specific registries (and other notifiable registries such as immunization registries).	5	
			Description: The user can export personal health information to disease specific registries, other notifiable registries such as immunization registries, through standard data transfer protocols or messages. The user can update and configure communication for new registries.		3. The system **SHOULD** provide the ability to add, change, or remove access to registries.	6	
S.1.2	F	Donor Management Support	**Statement:** Provide capability to capture or receive, and share needed information on potential donors and recipients.	IN.1.7	1. The system **MAY** provide the ability to document demographic and clinical information needed for the donation.	7	
				IN.2.4	2. The system **MAY** receive demographic and clinical information about potential donors.	8	
			Description: The user is able to capture or receive information on potential donors and recipients (for products such as blood, organs, eggs, sperm, or stem cells). The user can make this information available to internal and external donor matching agencies.		3. The system **MAY** receive demographic and clinical information about the donation.	9	
					4. The system **MAY** share documented demographic and clinical information about potential donors with appropriate outside parties.	10	
					5. The system **MAY** share documented demographic and clinical information about the donation with appropriate outside parties.	11	
S.1.3	H	Provider Information	**Statement:** Maintain, or provide access to, current provider information.	IN.1.3		12	
				IN.4			
S.1.3.1	F	Provider Access Levels	**Statement**: Provide a current registry or directory of practitioners that contains data needed to determine levels of access required by the system.	IN.2.3	1. The system **SHOULD** provide a registry or directory of all personnel who currently use or access the system.	13	
			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.	IN.3	2. The system **SHOULD** contain, in the directory, the realm-specific legal identifiers required for care delivery such as the practitioner's license number	14	
					3. The system **SHOULD** provide the ability to add, update, and inactivate entries in the directory so that it is current.	15	
					4. The system **SHOULD** contain, in the directory, the information necessary to determine levels of access required by the system security functionality.	16	
					5. The system **MAY** provide a directory of clinical personnel external to the organization that are not users of the system to facilitate documentation communication and information exchange.	17	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
S.1.3.2	F	Provider's Location Within Facility	**Statement**: Provide provider location or contact information on a facility's premises.		1. The system **SHOULD** provide the ability to input or create information on provider location or contact information on a facility's premises.	18	
			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.		2. The system **SHOULD** provide the ability to add, update, or inactivate information on provider's location or contact information on a facility's premises, so that it is current.	19	
S.1.3.3	F	Provider's On Call Location	**Statement**: Provide provider location or contact information when on call.	IN.2.3	1. The system **SHOULD** provide the ability to input or create information on provider location or contact information when on call.	20	
			Description: The provider immediate contact information. This may include on call practitioners on a facility's premises as well as on call contact information after scheduled working hours.		2. The system **SHOULD** provide the ability to add, update, or obsolete information on a provider's on call location or contact information, so that it is current.	21	
S.1.3.4	F	Provider's Location(s) or Office(s)	**Statement**: Provide locations or contact information for the provider in order to direct patients or queries.	IN.2.3	1. The system **SHOULD** contain information necessary to identify primary and secondary practice locations or offices of providers to support communication and access.	22	
			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.	IN.3	2. The system **SHOULD** provide the ability to add, update and obsolete information on the provider's primary and secondary practice locations or offices.	23	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
S.1.3.5	F	Team/Group of Providers Registry or Directory	**Statement**: Provide access to a current directory, registry or repository of information on Teams or Groups of providers in accordance with relevant laws, regulations, and organization or internal requirements. **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 1 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. phone or pager access number).	IN.2.3	1. The system **SHOULD** provide the ability to access a current directory, registry or repository of Teams or Groups of providers in accordance with relevant laws, regulations, and organization or internal requirements.	24	
					2. The system **SHOULD** conform to IN.3 (Registry and Directory Services), Conformance Criteria # 13 (The system MAY provide the ability to use registries or directories to identify healthcare resources and devices for resource management purposes).	25	
					3. The system **SHOULD** conform to S.3.4 (Manage Practitioner/Patient Relationships), Conformance Criteria #2 (The system SHALL provide the ability to specify the role of each provider associated with a patient such as encounter provider, primary care provider, attending, resident, or consultant).	26	
S.1.3.6	F	Provider Caseload/Panel	**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, zero to multiple defined caseloads or panels of members/patient/clients within the organization. Information about the caseload or panel includes such things as whether or not a new member/patient/client can be added. A member/patient may be provided access to a listing of caregivers with open caseloads or panels to select a provider.	DC.1.7.2.4 DC.3.1.1 DC.3.1.3 IN.2.3 IN.2.4	1. The system **SHALL** provide the ability to access a provider's caseload or panel information.	27	
					2. The system **SHALL** provide the ability to add, update, and remove access to panel information such as status.	28	
					3. The system **SHOULD** conform to function S.3.4 (Manage Practitioner/Patient Relationships).	29	
S.1.3.7	F	Provider Registry or Directory	**Statement**: Provide access to a current directory, registry or repository of provider information in accordance with relevant laws, regulations, and organization or internal requirements. **Description**: A system maintains or has access to provider information needed in the provision of care. This is typically a directory, registry or repository. Information includes, but is not limited to; full name, specialty, credentials, address or physical location, and a 24x7 telecommunications address (e.g. phone or pager access number). Views of the information are tailored to the user's security level and access need. For example, a nursing supervisor may need access to a provider's home phone. A member/patient wishing to select a primary care provider has a narrower view that would not include personal access information.	IN.1.3 IN.2.1 IN.3	1. The system **SHOULD** conform to IN.3 (Registry and Directory Services), Conformance Criteria #7 (The system SHOULD provide the ability to use registries or directories to uniquely identify providers for the provision of care).	30	
					2. The system **SHALL** contain provider information (such as full name, specialty, address and contact information), in accordance with scope of practice, organizational policy and jurisdictional law.	31	
					3. The system **SHALL** provide the ability to add, update, and remove access to entries in the registry or directory so that it is current.	32	
					4. The system **MAY** provide a directory of clinical personnel external to the organization that are not users of the system to facilitate documentation.	33	
					5. The systems **SHOULD** provide the ability to restrict the view of selected elements of the registry or directory information, subject to the user's security level and access needs.	34	
S.1.4	H	Patient Directory	**Statement**: Provide a current directory of patient information in accordance with relevant privacy and other applicable laws, regulations, and conventions. **Description**: The patient directory may capture information including but not limited to, full name, address or physical location, alternate contact person, primary phone number, and relevant health status information. The view of this information may vary based on purpose. Several specific directory views are described in the following functions.	DC.1.1.1 IN.1.4		35	
S.1.4.1	F	Patient Demographics	**Statement**: Support interactions with other systems, applications, and modules to enable the maintenance of updated demographic information in accordance with realm-specific recordkeeping requirements.	DC.1.3.3	1. The system **MAY** add and update patient demographic information through interaction with other systems, applications and modules.	36	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.	S.1.4 S.3.7.3			
					2. The system **MAY** accept and retrieve patient demographic information as required by realm specific laws governing health care transactions and reporting.	37	
				IN.2.3	3. The system SHALL provide linkage between the maternal and infant records for a given patient.		
S.1.4.2	**F**	Patient's Location Within a Facility	**Statement**: Provide the patient's location information within a facility's premises. **Description**: This function is intended to support maintaining and/or providing access to information on the patient's location during an episode of care. This function can be as simple as displaying the assigned bed for a patient (i.e. Adam W2-Reb 214). It can also be a function that supports real-time information on the patient location as they receive ancillary services in other parts of a facility (physical therapy or diagnostic imaging). Note: For standard reports like an ER Log or Census, see the Standard reports S.2.2. The system should support viewing a patient's specific location in terms that may include campus, building, wing, unit, room, bed. The system should support jurisdictional laws related to patient consent on disclosure. The patient location information should also be available when the provider is not in the patient record. As such, the systems may need to provide a query feature on patient location information. The system may support the identification of the patient by alternate identifying names.		1. IF the patient has an assigned location, THEN the system **SHALL** provide the ability to identify and display/view the patient's assigned location.	38	
					2. The system **SHOULD** support consents as they apply to the release of patient location information according to scope of practice, organization policy, or jurisdictional laws.	39	
					3. The system **MAY** provide the ability to identify the patient's current, real-time location, unambiguously, within a facility.	40	
					4. The system **MAY** provide the ability to query patient location information.	41	
					5. The system **MAY** provide the ability to query patient location by alternate identifying names.	42	
S.1.4.3	**F**	Patient's Residence for the Provision and Administration of Services	**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.	DC 1.1.2	1. The system **SHOULD** provide the ability to identify the patient's primary residence.	43	
					2. The system **MAY** provide the ability to identify the patient's secondary or alternate residence.	44	
					3. The system **MAY** provide the ability to enter and update patient information related to the provision of service.	45	
					4. The system **SHOULD** provide the ability to enter and update patient information related to transport, such as, mobility status, special needs and facility access (stairs, elevator, wheelchair access).	46	
					5. The system **SHOULD** provide the ability to enter and update patient residence information as necessary for public health reporting.	47	
S.1.4.4	**F**	Patient Bed Assignment	**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.	S.1.7	1. The system **SHOULD** support interactions as required to support patient bed assignment internal or external to the system.	48	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.6			
			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.		2. The system **MAY** provide patient information to an external system to facilitate bed assignment that optimizes care and minimizes risk.	49	
S.1.5	F	De-Identified Data Request Management	**Statement**: Provide patient data in a manner that meets local 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 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 a 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.	IN.1.6 IN.1.7 IN.1.8 IN.2.2 IN.3 IN.4.3 IN.5.1 IN.5.4	1. The system **SHALL** conform to IN.1.9 (Patient Privacy and Confidentiality) and provide de-identified views of data in accordance with scope of practice, organizational policy and jurisdictional law.	50	
				IN.6.1	2. The system **SHOULD** conform to IN.2.4 (Extraction of Health Record Information), Conformance Criteria #3 (The system SHOULD provide the ability to de-identify extracted information).	51	
S.1.6	F	Scheduling	**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. **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.	DC.3.1 DC.3.2.1	1. The system **MAY** provide the ability to access scheduling features, either internal or external to the system, for patient care resources.	52	
				IN.2.3	2. The system **MAY** provide the ability to access scheduling features, either internal or external to the system, for patient care devices.	53	
				IN.4.1	3. The system **MAY** incorporate relevant clinical or demographic information in the scheduling process.	54	
				IN.7	4. The system **MAY** pass relevant clinical or demographic information to support efficient scheduling with other system.	55	
S.1.7	F	Healthcare Resource Availability	**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.	S.1.4.4 IN.1.6 IN.5.1 IN.5.4	1. The system **MAY** collect information on healthcare resource availability through interactions with other systems, applications, and modules. 2. The system **MAY** provide the ability to access information on healthcare resource availability for internal assessment and planning purposes. Healthcare resources may include, but is not limited to available beds, providers, support personnel, ancillary care areas and devices, operating theaters, medical supplies, vaccines, and pharmaceuticals. 3. The system **MAY** provide the ability to export information on healthcare resource availability to authorized external parties. 4. The system **MAY** pass relevant clinical or demographic information for children with the same guarantor to support efficient scheduling with other system.	56 57 58	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
S.1.8	F	Information View	**Statement:** Support user-defined information views.	IN.2.4	1. The system **MAY** provide authorized administrators the ability to tailor the presentation of information for preferences of the user, department/area or user type.	59	
				IN.2.5.1			
			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.	IN.2.5.2	2. The system **MAY** provide authorized users the ability to tailor their presentation of information for their preferences.	60	
S.2	**H**	**Measurement, Analysis, Research and Reports**			1. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	61	
					2. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	62	
					3. The system **SHALL** conform to function IN.1.3 (Entity Access Control).	63	
					4. The system **SHALL** conform to function IN.1.9 (Patient Privacy and Confidentiality).	64	
					5. The system **SHALL** conform to function IN.2.4 (Extraction of Health Record Information).	65	
S.2.1	H	Measurement, Monitoring, and Analysis	**Statement:** Support measurement and monitoring of care for relevant purposes.	DC.2.6.1		66	
S.2.1.1	F	Outcome Measures and Analysis	**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.	S.3.6.2	1. The system **SHOULD** provide the ability to export or retrieve data required to evaluate patient outcomes.	67	
				IN.4.3	2. The system **MAY** provide data detailed by physician, facility, facility subsection, community or other selection criteria.	68	
			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 supportive workflow. e.g. Requesting specific information for reporting of emergency services such as gun shot, suspected abuse, communicable diseases etc, or for the collection of additional research data for specific a specific diagnosis.	IN.6	3. The system **SHOULD** provide the ability to define outcome measures for specific patient diagnosis.	69	
					4. The system **SHOULD** provide the ability to define outcome measures to meet various regional requirements.	70	
					5. The system **SHOULD** provide for the acceptance and retrieval of unique outcome data defined to meet regional requirements.	71	
					6. The system **MAY** provide the ability to define report formats for the export of data. This formatted data could be viewed, transmitted electronically or printed.	72	
					7. The system **MAY** provide the ability to define prompts in the clinical care setting that would request information needed to comply with regional requirements when specific triggers are met.	73	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
					8. The system **MAY** export data or provide a limited query access to data through a secure data service.	74	
S.2.1.2	F	Performance and Accountability Measures	**Statement:** Support the capture and subsequent export or retrieval of data necessary to provide quality, performance, and accountability measurements which providers, facilities, delivery systems, and communities are held accountable. **Description:** Many regions require regular reporting on the healthcare provided to individuals and populations. These reports may include measures related to process, outcomes, costs of care, may be used in 'pay for performance' monitoring and adherence to best practice guidelines. 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.	DC.2.6.3	1. The system **SHOULD** provide the ability to export or retrieve data required to assess health care quality, performance and accountability.	75	
				DC.2.6.2	2. The system **SHOULD** provide the ability to define multiple data sets required for performance and accountability measures.	76	
				S.3.6	3. The system **MAY** provide the data export in a report format that could be displayed, transmitted electronically or printed.	77	
				IN.5.4	4. The system **MAY** export data or provide a limited query access to data through a secure data service.	78	
S.2.2	H	Report Generation	**Statement:** Support the export of data or access to data necessary for report generation and ad hoc analysis. **Description:** Providers and administrators need access to data in the EHR-S for the generation of both standard and ad hoc reports. These reports may be needed for clinical, administrative, and financial decision-making, as well as for patient use. Reports may be based on structured data and/or unstructured text from the patient's health record.	DC.2.6.3 S.1.5 S.3.6	1. The system **SHALL** conform to function IN.2.2 (Auditable Records) in accordance with scope of practice, organizational policy and jurisdictional law.	79	
					2. The system **SHALL** conform to function IN.2.1 (Data Retention, Availability and Destruction).	80	
S.2.2.1	F	Health Record Output	**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.	DC.1.1.4 DC.1.4 IN.1.2	1. The system **SHALL** provide the ability to generate reports consisting of all and part of an individual patient's record, including growth charts.	81	
				IN.2.5.1 IN.2.5.2	2. The system **SHALL** provide the ability to define the records or reports that are considered the formal health record for disclosure purposes.	82	
				IN.4.1	3. The system **SHALL** provide the ability to generate reports in both chronological and specified record elements order.	83	
				IN.4.3	4. The system **SHALL** provide the ability to create hardcopy and electronic report summary information (procedures, medications, labs, immunizations, allergies, vital signs).	84	
				IN.5.1	5. The system **MAY** provide the ability to specify or define reporting groups (i.e. print sets) for specific types of disclosure or information sharing.	85	
				IN.5.4	6. The system **SHALL** provide the ability to include patient identifying information on each page of reports generated.	86	
				IN.6	7. The system **SHALL** provide the ability to customize reports to match mandated formats.	87	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
S.2.2.2	F	Standard Report Generation	**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 (such as Crystal Report). 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.	IN.1.9	1. The system **SHOULD** provide the ability to generate reports of structured clinical and administrative data using either internal or external reporting tools (e.g. predefined forms for school and sports physical examinations).	88	
				IN.2.5.1	2. The system **MAY** provide the ability to include information extracted from unstructured clinical and administrative data in the report generation process, using internal or external tools.	89	
				IN.2.5.2	3. The system **SHOULD** provide the ability to export reports generated.	90	
				IN.4.1	4. The system **SHOULD** provide the ability to specify report parameters, based on patient demographic and/or clinical data, which would allow sorting and/or filtering of the data.	91	
				IN.4.3	5. The system (or an external application, using data from the system) **MAY** provide the ability to save report parameters for generating subsequent reports.	92	
					6. The system (or an external application, using data from the system) **MAY** provide the ability to modify one or more parameters of a saved report specification when generating a report using that specification.	93	
S.2.2.3	F	Ad Hoc Query and Report Generation	**Statement:** Provide support for ad hoc query and report generation using tools internal or external to the system. **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.	IN.2.5.1	1. The system **SHOULD** provide the ability to generate ad hoc query and reports of structured clinical and administrative data through either internal or external reporting tools.	94	
				IN.2.5.2	2. The system **MAY** provide the ability to include information extracted from unstructured clinical and administrative data in the report generation process, using internal or external tools.	95	
					3. The system **SHOULD** provide the ability to export reports generated.	96	
					4. The system **SHOULD** provide the ability to specify report parameters, based on patient demographic and/or clinical data, which would allow sorting and/or filtering of the data.	97	
					5. The system **MAY** provide the ability to save report parameters for generating subsequent reports.	98	
					6. The system **MAY** provide the ability to modify one or more parameters of a saved report specification when generating a report using that specification.	99	
					7. The system **MAY** provide the ability to produce reports, using internal or external reporting tools, based on the absence of a clinical data element (e.g., a lab test has not been performed in the last year).	100	
S.3	**H**	**Administrative and Financial**		IN.1.9, IN.2.4	1. The system **SHALL** conform to function IN.1.1 (Entity Authentication).	101	
					2. The system **SHALL** conform to function IN.1.2 (Entity Authorization).	102	
					3. The system **SHALL** conform to function IN.1.3 (Entity Access Control).	103	
S.3.1	H	Encounter/Episode of Care Management	**Statement:** Support the definition of 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			104	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			This support is necessary for direct care functionality that relies on providing user interaction and workflows, which are configured according to clinical protocols and business rules 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.				
S.3.1.1	F	Specialized Views	**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.	DC.2.2.1.2	1. The system **SHOULD** provide the ability to define presentation filters that are specific to the types of encounter. These specifics may include care provider specialty, location of encounter, date of encounter, associated diagnosis.	105	
				S.1.3.7	2. The system **MAY** provide the ability to define presentation filters that are specific to the patent demographics.	106	
					3. The system **SHOULD** provide the ability to tailor a "user view".	107	
S.3.1.2	F	Encounter Specific Functionality	**Statement:** Provide assistance in assembling appropriate 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 supporting the appropriate data 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 necessary data from the patient's health record and patient registry. As the provider enters data, workflow processes are triggered to populate appropriate transactions and documents. For example, data entry might populate an eligibility verification transaction or query the immunization registry.	DC.3.1.1	1. The system **SHALL** provide workflow support for data collection appropriate for care setting.	108	
				IN.4.2	2. The system **SHOULD** provide the ability to create and modify data entry workflows.	109	
				IN.4.3	3. The system **SHOULD** provide the ability to extract appropriate information from the patient record as necessary to document the patient encounter.	110	
				IN.7	4. The system **SHOULD** provide a reduced set of diagnostic and procedure codes appropriate for the care setting.	111	
					5. The system **MAY** initiate secondary reporting workflows as a result of information entered into the encounter.	112	
S.3.1.3	F	Automatic Generation of Administrative and Financial Data from Clinical Record	**Statement:** Provide patients clinical data to support administrative and financial reporting. **Description:** A user can generate a bill based on health record data. Maximizing the extent to which administrative and financial data can be derived or developed from clinical data 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.	S.3.2.2 IN.4.1 IN.4.2	1. The system **SHOULD** provide the ability to define the data required for each external administrative and financial system.	113	
				IN.4.3	2. The system **SHOULD** export appropriate data to administrative and financial systems.	114	
S.3.1.4	F	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.	DC.1.1 DC.1.3.3	1. The system **SHOULD** provide the ability to capture patient data from remote devices and integrate that data into the patient's record.	115	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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 preventive care. For example, a diabetic pregnant Mom 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.	DC.1.7.2.1 DC.1.7.2.2 DC.1.7.3 DC.3.2.1 DC.3.2.3 DC.3.2.5 IN.1.4 IN.1.6 IN.1.7 IN.2.2 IN.2.3 IN.2.5.1			
				IN.2.5.2	2. The system **SHOULD** provide authorized users two-way communication between local practitioner and remote patient, or local practitioner to remote practitioner.	116	
S.3.1.5	**F**	Other Encounter and Episode of Care Support	**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, 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 direct care functionality that relies on providing user interaction and workflows, which are configured according to clinical protocols and business rules based on encounter specific values such as care setting, encounter type (inpatient, outpatient, home health, etc.), provider type, patient's record, health status, demographics, and the initial purpose of the encounter.	DC.3.1	1. The system **SHALL** provide the ability to organize patient data by encounter.	117	
				DC.3.2	2. The system **SHOULD** accept and append patient encounter data from external systems, such as diagnostic tests and reports.	118	
				IN.2.3	3. The system **SHALL** provide the ability to create encounter documentation by one or more of the following means: direct keyboard entry of text; structured data entry utilizing templates, forms, pick lists or macro substitution; dictation with subsequent transcription of voice to text, either manually or via voice recognition system.	119	
					4. The system **SHOULD** provide the ability to define presentation filters that are specific to the types of encounter. These specifics may include care provider specialty, location of encounter, date of encounter, associated diagnosis.	120	
S.3.2	**H**	Information Access for Supplemental Use	**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:** Using data standards and technologies that support interoperability, information access functionalities serve primary and secondary record use and reporting with continuous record availability and access that ensure the integrity of (1) the health record, (2) public health, financial and administrative reporting, and (3) the healthcare delivery process.			121	
S.3.2.1	**F**	Rules-Driven Clinical Coding Assistance	**Statement:** Make available all pertinent patient information needed to support coding of diagnoses, procedures and outcomes.	IN.4.1 IN.4.2	1. The system **SHALL** provide the ability to access pertinent patient information needed to support coding of diagnosis, procedures and outcomes.	122	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			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.	IN.4.3 IN.6			
				IN.7	2. The system **MAY** assist with the 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.	123	
S.3.2.2	F	Rules-Driven Financial and Administrative Coding Assistance	**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.	S.3.1.3 IN.2.5.1 IN.2.5.2	1. The system **SHALL** maintain financial and administrative codes.	124	
				IN.4.1	2. The system **SHOULD** provide the ability to retrieve data from the electronic health record as required to simplify the coding of financial and administrative documentation.	125	
				IN.4.3	3. The system **MAY** support rules driven prompts to facilitate the collection of data in the clinical workflow that is required for administrative and financial coding.	126	
				IN.6	4. The system **MAY** assist with the coding of required administrative and financial documents based on provider specialty, care setting and other information that may be entered into the system during the encounter.	127	
				IN.7	5. The system **MAY** internally generate administrative and financial coding such as place of service, type of facility, tax rates, etc.	128	
S.3.2.3	F	Integrate Cost/Financial Information	**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 and 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.	DC.1.7.1	1. The system **MAY** provide the ability to retrieve 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.	129	
				DC.1.7.2.4	2. The system **MAY** provide the ability to retrieve or request information about exemptions on coverage limitations and guidelines.	130	
				IN.4.3	3. The system **MAY** provide the ability to retrieve and provide 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.	131	
				IN.6	4. The system **MAY** alert the provider of care where formularies, preferred provider and other information indicate the health plan requires an alternative.	132	
					5. The system **SHOULD** conform to S.3.3.3 (Service Authorizations) to integrate support of prior authorization processes.	133	
S.3.3	H	Administrative Transaction Processing	**Statement:** Support the creation (including using external data sources, if necessary), electronic interchange, and processing of transactions listed below that may be necessary for encounter 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 encounter management during an episode of care. 〈 The EHR system shall capture the patient health-related information needed for administrative and financial purposes 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).			134	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			〈 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.				
S.3.3.1	F	Enrollment of Patients	**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.	DC.2.2.3 IN.1.6 IN.1.7	1. The system **SHOULD** provide the ability to retrieve subsidized and unsubsidized health plan options from internal or external sources to allow for presentation of alternatives for health care coverage to patients. 2. The system **MAY** provide the ability to retrieve health plan enrollment criteria to match patients health and financial status.	135 136	
S.3.3.2	F	Eligibility Verification and Determination of Coverage	**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 would 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.	IN.2.3 IN.5.1 IN.5.3 IN.5.4	1. The system **SHOULD** provide the ability to input patient health plan eligibility information for date(s) of service. 2. The system **MAY** provide authorized users the ability to input patient health plan coverage dates. 3. The system **MAY** provide the ability to input general benefit coverage information for patients. 4. The system **SHOULD** provide for the retention of eligibility date(s) of service, coverage dates, general benefits and other benefit coverage documentation for service rendered. 5. The system **MAY** provide the ability to transfer electronic eligibility information from internal and external systems. 6. The system **MAY** provide the ability to access information received through electronic prescription eligibility checking. 7. The system **MAY** provide authorized users the ability to collect and retain patient registration in special programs such as but not limited to: registries and case management. 8. The system **MAY** provide the ability to check for inconsistencies in the information recorded.	137 138 139 140 141 142 143 144	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
S.3.3.3	F	Service Authorizations	**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.	DC.1.1.3.1	1. The system **SHOULD** provide the ability to input service authorizations relevant to the service provided including the source, dates, and service(s) authorized.	145	
				IN.5.4	2. The system **SHOULD** provide the ability to input referrals relevant to the service provided including the source, date and service(s) referred.	146	
					3. The system **MAY** provide the ability to transfer and/or collect electronic, computer readable data on service authorization information, including specific data if mandated by local authority.	147	
					4. The system **MAY** provide the ability to transfer and/or collect electronic, computer readable data on service referral information, including specific data if mandated by local authority.	148	
S.3.3.4	F	Support of Service Requests and Claims	**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. **Description:** Retrieves structured and unstructured data, including but not limited to lab 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.	IN.2.5.1	1. The system **SHALL** provide the ability to view available, applicable clinical information to support service requests.	149	
				IN.2.5.2	2. The system **SHALL** provide the ability to view available, applicable clinical information to support claims.	150	
					3. The system **MAY** provide available, applicable clinical information to support service requests in computer readable formats.	151	
					4. The system **MAY** provide available, applicable clinical information to support claims in computer readable formats.	152	
S.3.3.5	F	Claims and Encounter Reports for Reimbursement	**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 by local authorities.	IN.2.5.1	1. The system **SHALL** provide the ability to view available, applicable information needed to enable the creation of claims and encounter reports for reimbursement.	153	
				IN.2.5.2	2. The system **SHALL** provide the ability to capture and present available, applicable data as required by local authority for audit and review.	154	
					3. The system **MAY** provide available, applicable data in a computer readable form when needed to enable the creation of claims and encounter reports for reimbursement.	155	
S.3.3.6	F	Health Service Reports at the Conclusion of an Episode of Care.	**Statement:** Support the creation of health service reports at the conclusion of an episode of care. Support the creation of health service reports to authorized health entities, for example public health, such as notifiable condition reports, immunization, cancer registry and discharge data that a provider may be required to generate at the conclusion of an episode of care. **Description:** Effective use of this function means that providers do not perform additional data entry to support health management programs and reporting.	S.2.2	1. The system **MAY** prompt providers for data needed for end of care reporting during the continuum of care to reduce the need for end of care data collection.	156	
				IN.7	2. The system **SHOULD** create service reports at the completion of an episode of care such as but not limited to; discharge summaries, public health reports, school excuse slips, parental work excuse slips, etc. using data collected during the encounter.	157	
S.3.4	F	Manage Practitioner/Patient Relationships	**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 access and update current information about the relationships between caregivers 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 appropriate providers.	DC.2.6.3	1. The system **SHALL** provide the ability to identify all providers by name associated with a specific patient encounter.	158	
				S.1.3.4	2. The system **SHALL** provide the ability to specify the role of each provider associated with a patient such as encounter provider, primary care provider, attending, resident, or consultant.	159	
				S.2.2	3. The system **SHALL** provide the ability to identify all providers who have been associated with any encounter for a specific patient.	160	
				IN.2.4	4. The system **SHOULD** provide authorized users the ability to add and update information on the relationship of provider to patient.	161	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			Example: 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.		5. The system **MAY** provide the ability to view patient lists by provider.	162	
					6. The system **SHALL** provide the ability to specify primary or principal provider(s) responsible for the care of a patient within a care setting.	163	
S.3.5	**H**	Subject to Subject Relationship	**Statement:** Document relationships between patients and others to facilitate appropriate access to their health record on this basis if appropriate. **Description:** A user may assign the relationships between patients and others to facilitate access to their health record. Some example may include parent, relatives, a legal guardian, health care surrogate or payer.	S.1.4.1 IN.1.3 IN.1.5 IN.2.2		164	
S.3.5.1	**F**	Related by Genealogy	**Statement:** Provide information on relationships by genealogy. **Description:** Relationships by genealogy may include genetic mother, next of kin, or family members. Appropriate consents must be acquired prior to the collection of use of this information.	DC.1.1.3.1 DC.1.3.3	1. The system **SHALL** provide the ability to collect and maintain genealogical relationships.	165	
					2. The system **SHALL** provide the ability to identify persons related by genealogy.	166	
					3. The system **SHOULD** provide the ability to collect and maintain patient consents required to allow patient records to be viewed for the purposes of a genealogical family member's family medical history.	167	
S.3.5.2	**F**	Related by Insurance	**Statement:** Support interactions with other systems, applications, and modules to provide information on relationships by insurance (domestic partner, spouse, and guarantor).		1. The system **MAY** provide the ability to identify persons related by insurance plan.	168	
S.3.5.3	**F**	Related by Living Situation	**Statement:** Provide information on relationships by living situation (in same household).		1. The system **MAY** provide the ability to identify patients related by living situation.	169	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
S.3.5.4	F	Related by Other Means	**Statement:** Provide information on relationships by other means. **Description:** Other relationships that may need to be recorded would include but not be limited to 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 identify patients related by employer and work location for purposes of epidemiological exposure and public health analysis and reporting.	170	
					2. The system **SHOULD** provide the ability to identify persons with Power of Attorney for Health Care or other persons with the authority to make medical decisions on behalf of the patient.	171	
S.3.6	F	Acuity and Severity	**Statement:** Provide the data necessary to support and manage patient acuity/severity for illness/risk-based adjustment of resource. **Description:** 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. Acuity data helps determine what is, indeed, 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. Also, acuity and severity data is routinely the evidential basis most frequently cited by staff when recommending clinical staffing changes.	S.2.1.2	1. The system **SHOULD** provide the ability to collect appropriate existing data to support the patient acuity/severity processes for illness/risk-based adjustment of resources.	172	
					2. The system **MAY** provide the ability to export appropriate data to support the patient acuity/severity processes for illness/risk-based adjustment of resources.	173	
					3. The system **MAY** prompt the user to provide key data needed to support acuity/severity processes.	174	
S.3.7	H	Supportive Function Maintenance	**Statement:** Update EHR supportive content using a manual or automated process.			175	
S.3.7.1	F	Clinical Decision Support System Guidelines Updates	**Statement:** Facilitate and/or perform updates of clinical decision support system guidelines and associated reference material. **Description:** 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.	DC.2.6.3 DC.2.7.1 IN.2.2	1. The system **SHALL** provide the ability to update the clinical content or rules utilized to generate clinical decision support reminders and alerts.	176	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
				IN.4.1 IN.4.3 IN.5.1 IN.5.3			
				IN.5.4	2. The system **SHOULD** validate that the most applicable version is utilized for the update, and capture the date of update.	177	
				IN.6	3. The system **MAY** track and retain the version used when guidelines are provided in a patient encounter.	178	
S.3.7.2	**F**	Patient Education Material Updates	**Statement:** Receive and validate formatted inbound communications to facilitate and/or perform updating of patient education material.	DC.3.2.4	1. The system **MAY** provide the ability to capture and update material that may be printed and provided to the patient at the point of care.	179	
			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.		2. The system **MAY** provide the ability to validate the material prior to update.	180	
S.3.7.3	**F**	Patient Reminder Information Updates	**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.	DC.2.2.4 DC.2.3.2 DC.2.5.1 DC.2.5.2 DC.3.2.3 S.1.4.1	1. The system **MAY** provide the ability to add patient reminders for patients based on the recommendations of public health authorities or disease specific associations.	181	
				IN.2.2	2. The system **MAY** provide the ability to automatically associate patient reminders with patients meeting specific phenotypic criteria such as age, gender, diagnosis, etc.	182	
				IN.5.2	3. The system **MAY** provide the ability to display patient reminders, manually process, and record associated telephone contacts.	183	
				IN.6	4. The system **MAY** provide the ability to automatically generate patient reminders for mailing to patients.	184	
S.3.7.4	**F**	Public Health Related Updates	**Statement:** Receive and validate formatted inbound communications to facilitate updating of public health reporting guidelines.	IN.4.3 IN.5.2	1. The system **MAY** provide the ability to capture and update public health reporting guidelines.	185	

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Original Row #	Reference/Comment
			Description: Information and reporting requirements from outside groups, such as public health organizations, may be made available to patient 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.		2. The system **MAY** provide the ability to validate the material prior to update.	186	