Model EHR Format for Children

HCIL Symposium

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Learning Objectives

▸ Understand the Model EHR Format, its structure and draft content

▸ Understand how the model Format can be used to develop new, or enhance existing EHR products to help providers optimize healthcare for children

▸ Understand how to use the model children's EHR Format to assist children's healthcare providers in selecting EHR systems

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Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA)

▸ Section 401 (f) Development of a Model EHR Format for Children Enrolled in Medicaid or CHIP

▸ By 1/1/2010 the Secretary shall establish a program to encourage the development & dissemination of a model EHR Format for children
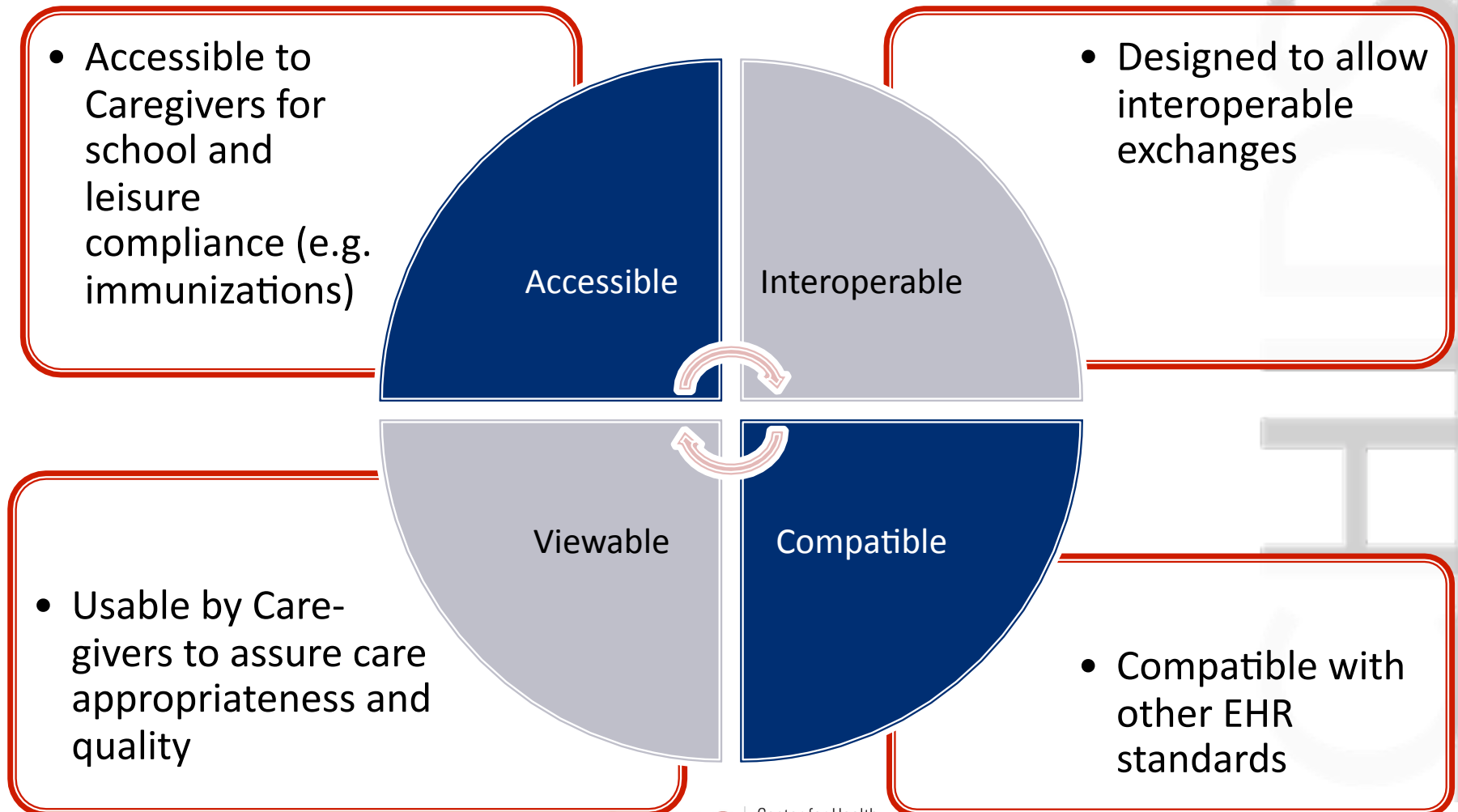
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By law, the model EHR Format for children must be:

- Accessible to Caregivers for school and leisure compliance (e.g. immunizations)

- Designed to allow interoperable exchanges

Accessible | **Interoperable**

Viewable | **Compatible**

- Usable by Care-givers to assure care appropriateness and quality

- Compatible with other EHR standards

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CHIPRA Demonstration Projects

Section 401, Model EHR Format provision: "demonstrate the impact of the model EHR format for children developed and disseminated under subsection (f) on improving pediatric health, including the effects of chronic childhood conditions, and pediatric health care quality, as well as reducing health care costs"

Project Team

What is a "Format?"

Requirements for:

▸ A minimum set of data elements

▸ Applicable data standards

▸ Usability

▸ Functionality

▸ Interoperability

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Project Overview

Existing EHR systems often do not optimally support the provision of health care to children. The goal is to develop a model EHR Format for children, demonstrate that it can be readily used, and package it in a way that facilitates broad incorporation into EHR systems. The project will:

▸ Develop a framework for the optimal EHR for children HCP's
▸ Identify gaps between existing systems and this framework
▸ Design, develop, test, and disseminate the model Format
▸ Assess existing products for conformance with the Format
▸ Demonstrate consumption of the Format

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Component Tasks

Environmental Scan and Gap Analysis

- Intermountain Healthcare

Develop the Format

- Westat and Team

Conformance Testing

- University of Maryland

Prototype Development

- Duke and University of Maryland

Dissemination

- Westat

Challenges to Development Process

- Determining "incremental" needs for children
- Focusing on the "what" not the "how"
- SHALL / SHOULD / MAY
- Lack of vocabulary standards for pediatrics
- Focusing on what is "doable" in today's technology

Technical Expert Panel (TEP)

▸ Provide input and feedback to project overall

▸ Review key documents and deliverables

▸ Provide guidance on functionalities and requirements

▸ Serve as a resource on specific clinical, technical, and child welfare issues

TEP Representation

- Physician Informaticians
  - Children's health focus
  - More general health focus
- Non-Physician clinicians
- Children's advocacy organizations
- Medicaid
- Vendor
- Federal Agencies (ONC, IHS)

Topics

- Activity Clearance
- Birth Information
- Child Abuse Reporting Form
- Child Welfare
- Children with Special Health Care Needs
- Growth data
- Immunizations
- Medication Management
- Newborn Screening
- Parents, Guardians, and Family Relationship Data
- Patient (Child) Identifier

- Patient Portals – Personal Health Record (PHR)
- Prenatal Screening
- Primary Care
- Quality Measures
- Registry Linkages
- School-based Linkages
- Security and Confidentiality
- Special Terminology and Information
- Specialized Scales and Scoring
- Well Child and Preventive Care

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Target Audiences for Format

▸ CHIPRA Demonstration grantees

▸ Developers of existing EHR products

▸ New developers

▸ System purchasers

▸ Certifying bodies

▸ Standards groups

▸ Regulators

▸ Users/developers of "Meaningful Use" criteria

Demonstration of Model Children's EHR Format Sample Requirements Data

Screenshots of requirements: 4 topics

▶ Growth data

▶ Medication management

▶ Birth information

▶ Newborn screening

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irements View: Growth Data requirements

irements meet the criteria specified for this view. Learn more

Who are the owners of this view?

ins all the requirements that fall under the topic area of - Growth Data

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	Child	ID	Title	Description	Topic Area	Provenance	Source ID ↑
edit | del	⊟	Req-877	Editing of data		Growth Data	SME	10
edit | del		Req-878	Support implementation of a process to correct growth data	The system SHALL have a process to correct growth data. This process shall include a method to track changes.	Growth Data	SME	10.1
edit | del		Req-879	Ability to correct the growth data from the growth chart	The system SHALL allow the user to correct growth data directly from the growth chart, by interacting directly with the graphical data point, rather than having to first go to a tabular (flowsheet) representation	Growth Data	SME	10.2
edit | del		Req-878	Support implementation of a process to correct growth data	The system SHALL have a process to correct growth data. This process shall include a method to track changes.	Growth Data	SME	10.1
edit | del		Req-879	Ability to correct the growth data from the growth chart	The system SHALL allow the user to correct growth data directly from the growth chart, by interacting directly with the graphical data point, rather than having to first go to a tabular (flowsheet) representation	Growth Data	SME	10.2
edit | del	⊟	Req-840	Growth Charts	Anthropometric measures and trends in growth are central to the prevision of pediatric care. Abnormal growth is often the first sign of underlying chronic illness. In addition, body size is necessary for the dosing of most drugs in pediatrics. In general, there are three main direct measures - head circumference, length/height, and weight. Body mass index is calculated based on weight and height.	Growth Data	SME	2
edit | del		Req-839	Display Growth Charts	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).	Growth Data	HL7 CH FP R1 - SME	2.2
edit | del		Req-842	Ability to print the curves	For all curves described here, the System SHALL provide the ability to print the curve so that it can be provided to the parent.	Growth Data	SME	2.3
edit | del		Req-843	Ability to display date of each data point on curve	For all curves described here, the curve SHOULD show provide a display of the date of each data point shown on the curve	Growth Data	SME	2.4
edit | del		Req-844	Ability to zoom in and zoom out the display	For all curves described here, the System SHOULD allow the magnification ("zooming") of the display in order to facilitate understanding of curves where there are many densely-spaced data points.	Growth Data	SME	2.5
edit | del		Req-845	Ability to exclude data points from growth charts	For all curves described here, the system SHOULD allow for the exclusion of selected data points from growth charts, as in when a patient presents with an acute abnormality that affects the measurement (e.g., acute dehydration).	Growth Data	SME	2.6
edit | del		Req-846	Support displaying normative curves in standard deviations	For all curves described here, the system MAY provide views of normative curves in standard deviations to allow for the interpretation of more extreme measurements (e.g., charts for very obese children where all measurements are >>9th percentile)	Growth Data	SME	2.7
edit | del		Req-839	Display Growth Charts	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).	Growth Data	HL7 CH FP R1 - SME	2.2
edit | del		Req-842	Ability to print the curves	For all curves described here, the System SHALL provide the ability to print the curve so that it can be provided to the parent.	Growth Data	SME	2.3
edit | del		Req-843	Ability to display date of each data point on curve	For all curves described here, the curve SHOULD show provide a display of the date of each data point shown on the curve	Growth Data	SME	2.4

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nts View: **Medication Management requirements**

s meet the criteria specified for this view. Learn more   Who are the owners of this view?

s all the requirements that fall under the Medication Management topic area   ▶ Actions ▾   ✉ Email   🖶 Print

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Child	ID	Title	Description	Provenance	Topic Area	Source ID
el	Req-259	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.	HL7 EHR FM R1	Medication Management	DC.1.4.2
el	Req-596	Capturing medication details	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.	HL7 EHR FM R1 - HL7 CH FP R1	Medication Management	DC.1.4.2-3
el	Req-597	Capturing additional medication details	The system SHALL provide the ability to capture other dates associated with medications such as start and end dates.	HL7 EHR FM R1 - HL7 CH FP R1	Medication Management	DC.1.4.2-4
el	Req-880	Ability to capture reasons for start/stop of a medication	The system SHOULD provide the ability to capture the reasons for start/stop of a medication	SME	Medication Management	2.4
el	Req-272	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.	HL7 EHR FM R1	Medication Management	DC.2.3.1.2
el	Req-448	Ability to identify other-than-standard doses	The system SHALL provide the ability to detect a daily dose that exceeds the recommended range for patient age or maximum recommended adult dose whichever is smallest, and inform the user during ordering.	CCHIT - IH Gap Analysis	Medication Management	IH.07.002
el	Req-449	Ability to detect a drug dose that falls outside the min-max range	The system SHALL provide the ability to detect a drug dose that falls outside the min-max range based on the patient's age, weight, and maximum recommended adult dose, for a single dose for the medication and to inform the clinician during ordering.	CCHIT - IH Gap Analysis	Medication Management	IH.07.003
el	Req-454	Calculating medication dosage based on reference weight	The system SHALL provide the ability to calculate medication dosages based on reference weight where appropriate.	IH Gap Analysis	Medication Management	IH.07.006
el	Req-646	Drug dosage computation	The system SHALL compute drug doses, based on appropriate dosage ranges, using the patient's body weight.	HL7 CHWG - HL7 EHR FM R1 - HL7 CH FP R1	Medication Management	DC.2.3.1.2-8
el	Req-648	Dosing Weight	The system SHALL provide the ability to specify an alternative "dosing weight" for the purposes of dose calculation.	HL7 CHWG - HL7 EHR FM R1 - HL7 CH FP R1	Medication Management	DC.2.3.1.2-10
el	Req-649	Drug dosage computation	The system SHALL perform drug dosage functions using any component of a combination drug (e.g., acetaminophen-hydrocodone).	HL7 CHWG - HL7 EHR FM R1 - HL7 CH FP R1	Medication Management	DC.2.3.1.2-11

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Requirements View: Birth Information Requirements

69 requirements meet the criteria specified for this view. Learn more   Who are the owners of this view?

This view contains all the requirements that fall under the topic area Birth Information   ▶ Actions ▾   ✉ Email   🖨 Print

< prev | 1-50 | 51-100 | next >

	Child	ID	Title	Description	Environment (s)	Topic Area	Provenance
read | edit | del	⊟	Req-895	Birth History	Birth represents a significant milestone in pediatric medicine. Newborn babies undergo large physiologic changes that make them susceptible to medical problems in the perinatal period. An accurate birth history provides the foundation for good pediatric care	Inpatient	Birth Information	SME
read | edit | del	⊟	Req-896	Growth and Developmental Parameters	Intrauterine growth, symmetry, and maturation are critical aspects of the birth history.	Inpatient	Birth Information	SME
read | edit | del		Req-94	Birth Order : Familial Rank	The system SHALL record Birth Order (Familial Rank)	All	Birth Information	IH Gap Analysis
read | edit | del		Req-837	Collect date and time of birth to the minute	The system SHALL enable entry of the date and time of birth (no less precisely than to the minute) if required by the scope of practice	All	Birth Information, Well Child	SME
read | edit | del		Req-838	Store date and time of birth to the minute	The system SHALL store the date and time of birth (no less precisely than to the minute) if required by the scope of practice	All	Birth Information, Well Child	HL7 CH FP R1 - IH Gap Analysis - SME
read | edit | del		Req-897	Ability to record Birth weight in kg	The system SHALL record birth weight in kilograms to 3 decimal places.	Inpatient	Birth Information	SME
read | edit | del		Req-898	Ability to record gestational age based on LMP	The system SHALL record gestational age in weeks and days based on LMP, Ultrasound or Maternal Report	Inpatient	Birth Information	SME
read | edit | del		Req-899	Ability to record gestational age based on Dubowitz scoring	The system SHALL record gestational age in weeks based on Dubowitz scoring or Ballard Exam	Inpatient	Birth Information	SME
read | edit | del		Req-900	Ability to record if infant is singleton, twin, or multiple gestation	The system SHALL record whether the infant is a singleton, twin, or multiple gestation.	Inpatient	Birth Information	SME
read | edit | del		Req-901	Ability to record birth order	If an infant is not a singleton, the system SHALL record the birth order	Inpatient	Birth Information	IH Gap Analysis - SME
read | edit | del		Req-902	Ability to record infant size relative to gestational age	The system SHALL record the size of the infant relative to gestational age (SGA=Small for Gestational Age, AGA=Appropriate for Gestational Age, LGA=Large for Gestational Age)	Inpatient	Birth Information	SME
read | edit | del		Req-903	Ability to record symmetry	The system SHALL record symmetry as Symmetrical or Asymmetrical	All	Birth Information	SME
read | edit | del	⊟	Req-904	Maternal Data and Labs	Maternal laboratory data and serologies are critical to the care of a newborn infant	All	Birth Information	SME
read | edit | del		Req-905	Ability to record maternal Gravida / Para / Abortus status / Living Children	The system SHALL record maternal Gravida / Para / Abortus status / Living Children	All	Birth Information	SME
read | edit | del		Req-906	Ability to record maternal blood type	The system SHALL record maternal blood type	All	Birth Information	SME
read | edit | del		Req-907	Ability to	The system SHALL record maternal antibody status	All	Birth	SME

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ments View: Newborn Screening Requirements

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ontains all the requirements that are related to Newborn Screening

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< prev | 1-50 | next >

Child	ID	Title	Description	Topic Area	Provenance	Source ID ✦
dit | del	Req-820	Receipt of Newborn Screening Testing	The goal of newborn screening is to identify a wide range of conditions that can potentially benefit from early detection during the presymptomatic or early symptomatic period. Historically, newborn screening has been based on dried blood spot analysis by state public health departments. More recently, point-of-service testing in the nursery (e.g., newborn hearing screening) has been included. Another point-of-service test that will likely be added in the coming year to newborn screening is pulse oximetry to detect critical cyanotic congenital heart disease. Newborn screening is expanding at a rapid rate. Although the US Secretary of Health and Human Services makes recommendations about what should be included as part of newborn screening, individual states are responsible for developing their own panel, including the threshold for a positive test. Some states require retesting of all newborns. States have varying methods of short and long-term follow-up for those that have tested pos...	Newborn Screening	SME	3
dit | del	Req-799	Compliance with state requirements for newborn screening	The system SHALL comply with the state requirements for newborn screening and be modifiable by birth location	Newborn Screening	SME	3.2
dit | del	Req-800	Record age when newborn dried blood spot collected	The system SHALL record the age of the neonate when the newborn dried blood spot was collected. Multiple samples may be collected, such as in those states that require repeat testing or on prematurely born neonates	Newborn Screening	SME	3.3
dit | del	Req-801	Record age when mandated point-of-service testing occurred	The system SHALL record the age of the neonate when mandated point-of-service testing occurred. Presently, this is only newborn hearing screening. However, this is going to expand.	Newborn Screening	SME	3.4
dit | del	Req-802	Record refusal of newborn dried blood spot testing	The system SHALL record if parents refuse newborn dried blood spot testing	Newborn Screening	SME	3.5
dit | del	Req-803	Record refusal of point-of-service testing	The system SHALL record if parents refuse point-of-service testing.	Newborn Screening	SME	3.6
dit | del	Req-799	Compliance with state requirements for newborn screening	The system SHALL comply with the state requirements for newborn screening and be modifiable by birth location	Newborn Screening	SME	3.2
dit | del	Req-800	Record age when newborn dried blood spot collected	The system SHALL record the age of the neonate when the newborn dried blood spot was collected. Multiple samples may be collected, such as in those states that require repeat testing or on prematurely born neonates	Newborn Screening	SME	3.3
dit | del	Req-801	Record age when mandated point-of-service testing occurred	The system SHALL record the age of the neonate when mandated point-of-service testing occurred. Presently, this is only newborn hearing screening. However, this is going to expand.	Newborn Screening	SME	3.4
dit | del	Req-802	Record refusal of newborn dried blood spot testing	The system SHALL record if parents refuse newborn dried blood spot testing	Newborn Screening	SME	3.5
dit | del	Req-803	Record refusal of point-of-service testing	The system SHALL record if parents refuse point-of-service testing.	Newborn Screening	SME	3.6
dit | del	Req-821	Newborn Screening Results	ONC and HRSA are actively developing use cases and other health IT resources around newborn screening. A use case is available at: http://www.hhs.gov/healthit/usecases/documents/NBSDetailedUseCase.pdf [1]. The U.S. National Library of Medicine (NLM) has published the Newborn Screening Coding and Terminology to promote and facilitate the use of electronic health data standards for the conditions recommended for screening by the HHS Secretary's Advisory Committee on Heritable Disorders in Newborns and Children (ACHDNC). This is available at: http://newbornscreeningcodes.nlm.nih.gov/ [2]. ONC and HRSA are actively developing use cases and other health IT resources around newborn screening. A use case is available at: http://www.hhs.gov/healthit/usecases/documents/NBSDetailedUseCase.pdf [3]. The U.S. National Library of Medicine (NLM) has published the Newborn Screening Coding and Terminology to promote and facilitate the use of electronic health data standards for the conditions recom...	Newborn Screening	SME	4
dit | del	Req-804	Record results of dried blood spot newborn screening	The system SHALL record the results of dried blood spot newborn screening. For each condition tested within each state, the results can be Normal, Out-of-Range, or Insufficient (e.g., sample processing error). Out-of-Range SHALL be further defined based on the individual test. For example, hemoglobinapathy out-of-range results includes Sickle Cell Trait. The type of Out-of-Range results varies by individual state.	Newborn Screening	SME	4.2
dit | del	Req-805	Record results of point-of-service testing	The system SHALL record the results of point-of-service testing	Newborn Screening	SME	4.3

Annotated growth chart

Requirement Details: **[Req-876] Display clinical context for each point on growth chart**

Related: Req (2) - FT (0) - UC (0) | Attachments (0) | Links (0) | Discussions (0)

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Basic Information

Updated 7 months ago by Anubhav Sharma

Requirement ID:	Req-876 Version: v6
Title:	Display clinical context for each point on growth chart
Description:	The system SHOULD allow display of clinical context for each data point on the growth chart (e.g., acute illness such as diarrhea, ventilated, or receiving growth hormone).
Requirement Set (under development):	Clinical Decision Support
Tags:	
Environment(s):	● All
Owner (development only):	
Function Type(s):	● Direct Care
Topic Area:	● Growth Data
Source(s):	● Growth Data Version 1.5, 1/27/2011
Meaningful Use (under development):	
See Also:	
Importance:	High
Requirement Subset (under development):	Predictive Growth and other decision support
Project (development only):	
Source ID:	9.2
Comment(s):	
Provenance:	HL7 CH FP R1 - SME
Specialty (under development):	
Release Status:	Released
Requirement Type:	Normative Statements
Review Status (development only):	● Reviewed: copy/edits ● Reviewed: Clinical QA ● Reviewed: Titles Edited
Shall/Should/May:	SHOULD

Relationship Tree For: Req-876 Display clinical context for each po

< Back to Req-876

RELATIONSHIP SUMMARY FOR Req-876:

Supersedes: 1 other requirements
Is Child Of: 1 other requirements

Req-876 Supersedes:

- Req-623 Data points in clinical context (Status not yet assigned)

Req-876 Is Child Of:

- Req-874 Predictive growth and clinical context (All)
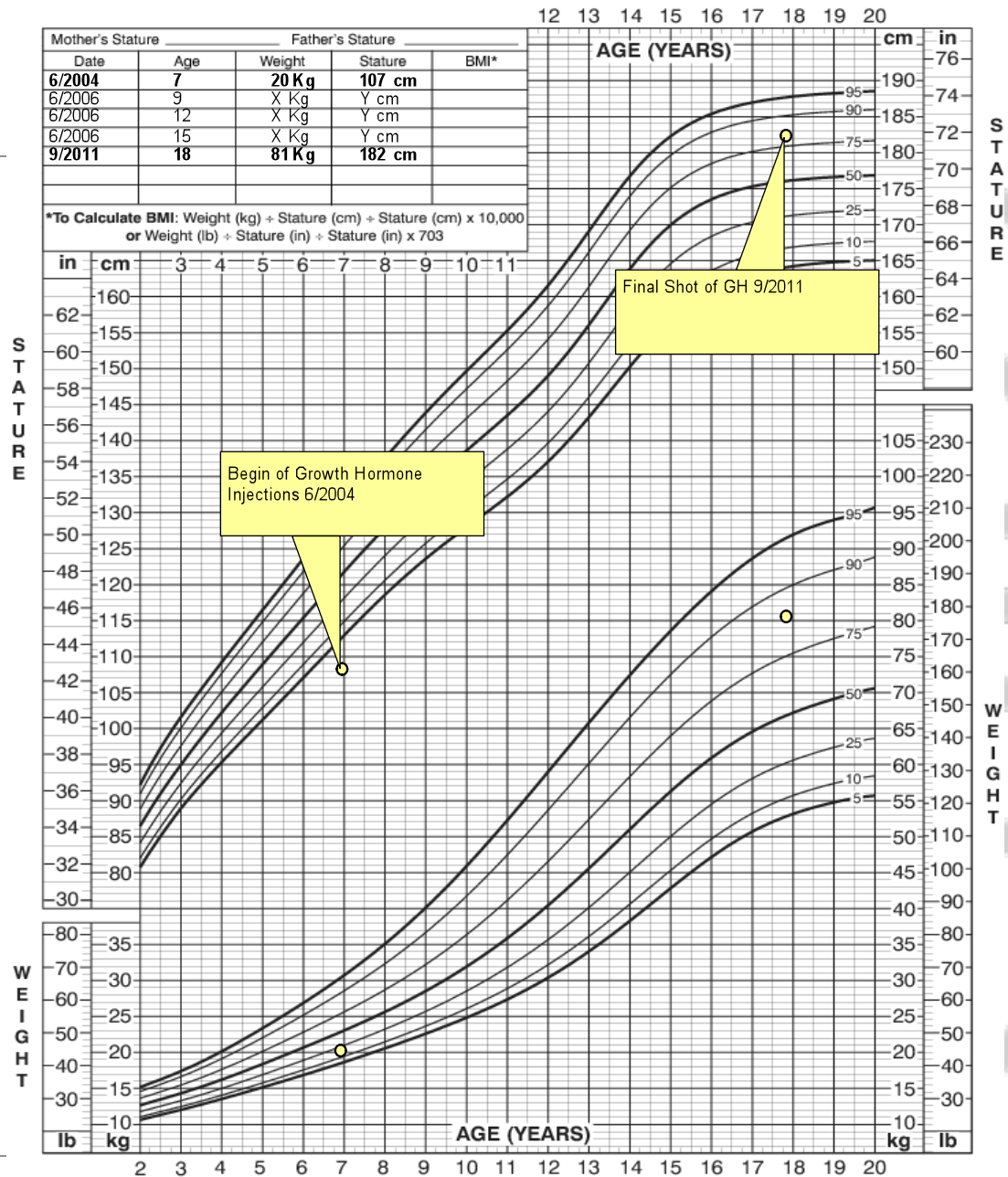 - ◇ Req-280 Clinical Decision Support (Status not yet assigned)

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Prototyping

▸ Annotated growth chart

Conformance Testing

▸ 7 leading EHR vendors of interest to CHIPRA grantees at real practice sites

▸ 3 Use Cases – SHALL and High Importance

  ▸ Well Child

  ▸ Teen with Social Service Referrals

  ▸ Newborn Screening

▸ Assess for feature success and usability

▸ Share and allow response from vendors

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Summary

▸ >700 *incremental* EHR requirements for children

▸ No new standards set

▸ Compatible with existing & potential systems

▸ Primary care and general inpatient care

▸ Will be accessible through Accompa guest account

▸ Expect to formally release the Format late summer.

Questions?