

What Don't You Know About Your Own Data?

April 22, 2025

Didi Davis, VP, Informatics,
Conformance & Interoperability





Agenda

- Background: eHealth Exchange Content Testing Program - Data Quality Improvement Program
- Data Quality Improvement Content Testing Program
- The Sequoia Project's Data Usability
- Data Usability
 - Interoperability Matters: Data Usability Workgroup
 - Data Usability Implementation Guide V2.0
 - Data Usability Taking Root Initiative
- Hub ITP Content Testing Tooling Overview

Background: Data Quality Improvement Content Testing Program



eHealth Exchange™



eHealth Exchange Testing Program Overview



eHealth Exchange Participant Testing Program: This process verifies that Systems used by Applicants and Participants comply with the Specifications and satisfy the requirements established by the DURSA.



eHealth Exchange Validated Product Program: This process verifies that the Systems developed by Vendors that may be used by Applicants and Participants, comply with the Specifications prior to being implemented in the Applicant's and / or Participant's production environment. The objective is to establish built-in conformance and interoperability into these Systems to minimize variability in System compliance in production.



eHealth Exchange Content Testing Program: documentation, testing methodology, and test data that will be required for interoperability testing to enable the exchange of clinical content between eHealth Exchange Participants.

Testing Continuum & Interoperability Testing Tooling (ITP)

- The community has developed a large body of test cases, data, and validation tools
- Designed to ensure interoperability and assure compliance and minimal implementation
- Collaboration on the development of testing tools with [IHE International](#), [IHE Catalyst](#), and [NIST](#) to support [eHealth Exchange validation](#) testing programs
- Battle-hardened by years of operations and productized into the new





eHealth Exchange Product Testing Program tests conformance of Transport, Security and Content

- Developed to provide a high degree of assurance that systems conform to the eHealth Exchange Performance Specifications and underlying standards and interoperate with other systems without error or further customization, while remaining conformant.
- **This will significantly reduce the level of effort and cost to any organization that onboards utilizing an eHealth Exchange Validated product.**
- Validated Products receive the eHealth Exchange Validated Products Seal





Validated Product Vendors:

VENDOR	VENDOR	VENDOR	VENDOR	VENDOR	VENDOR	VENDOR	VENDOR
ORACLE Cerner	Ciox Health	Deloitte.	Epic	HealthCatalyst	InterSystems Health Business Government	KPININJA	Lightbeam Health Solutions
VALIDATED PRODUCT Clinical Exchange Platform Awarded QTS Basic* \$19,000 in Testing Fees Waived Cerner Resonance \$8,000 in Testing Fees Waived	VALIDATED PRODUCT PRISM™ \$8,000 in Testing Fees Waived	VALIDATED PRODUCT HealthInteractive Platform for HIE – v1.0 \$8,000 in Testing Fees Waived	VALIDATED PRODUCT Care Everywhere Awarded QTS Intermediate* \$19,000 in Testing Fees Waived	VALIDATED PRODUCT Network v5 and v7 \$8,000 in Testing Fees Waived	VALIDATED PRODUCT HealthShare 2021.2 \$8,000 in Testing Fees Waived	VALIDATED PRODUCT KPI Ninja \$8,000 in Testing Fees Waived	VALIDATED PRODUCT Lightbeam HIE \$8,000 in Testing Fees Waived

VENDOR	VENDOR	VENDOR	VENDOR	VENDOR	VENDOR	VENDOR	VENDOR	VENDOR
LTS Health Exchange	MedicaSoft	nextgen healthcare	ORION HEALTH™	Outcome Healthcare HIE on FHIR	PHILIPS	PointClickCare	zen healthcare IT	zeomega
VALIDATED PRODUCT LTS HEX \$8,000 in Testing Fees Waived	VALIDATED PRODUCT NXT Version 4.01 \$8,000 in Testing Fees Waived	VALIDATED PRODUCT NextGen Connect \$8,000 in Testing Fees Waived	VALIDATED PRODUCT Exchange Gateway v4 \$8,000 in Testing Fees Waived	VALIDATED PRODUCT Outcome Healthcare \$8,000 in Testing Fees Waived	VALIDATED PRODUCT Interoperability Solutions Platform \$8,000 in Testing Fees Waived	VALIDATED PRODUCT Ai Gateway \$8,000 in Testing Fees Waived	VALIDATED PRODUCT Gigigate Stargate IHE Gateway \$8,000 in Testing Fees Waived	VALIDATED PRODUCT Jiva HIE Connect 6.0.2 \$8,000 in Testing Fees Waived

~25 additional technologies are also widely used by the eHealth Exchange Participants



Industry-wide Content Pain Points



Optionality:

More than one way to do things and inconsistent implementations across vendors



Terminology:

Inconsistent terminology usage



Specification Ambiguity

Standards may be unclear and include multiple layers of specifications



Complexity:

The C-CDA standard is difficult to understand and consume and is lacking in clearly documented examples



Content Testing Background

- Launched Content Testing Program – February 2018
 - Testing Conformance to Meaningful Use 2011, 2014 and 2015 Edition Requirements
- CC Announced deprecation of Meaningful Use 2011 and 2014 for New Clinical Documents 12/31/23
 - MU 2011 Edition - HL7 C32
 - MU 2014 Edition – HL7 C-CDA R1.1
- Data Sources to create New Clinical Content conformant to MU 2015 Edition
 - HL7 C-CDA R2.1 MUST conform to the [Common Clinical Data Set \(CCDS\)](#)



Process for Creating Consistent & Robust HL7 C-CDAs



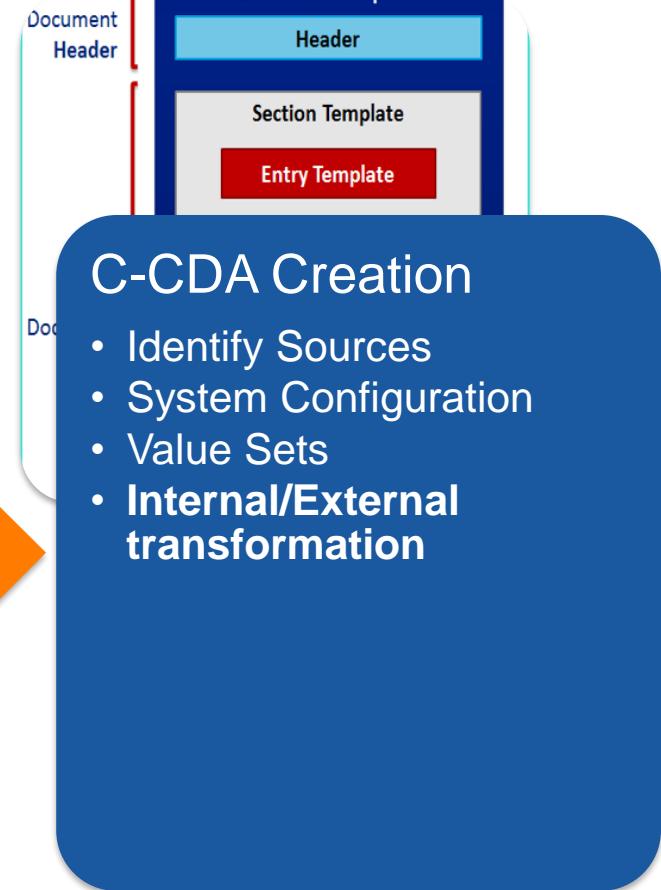
Content Priorities

- Clinicians
- Business Office
- Others

Data Mapping	SUT	HL7 C-CDA CCD	
Patient Gender	0	UN	"Administrative Gender" value
1 ("Male")	M		
2 ("Female")	F		
"Continuing"	1 ("Yes")	active	"Problem Observation"
	2 ("No")	inactive	

Data Mapping

- SDO Requirements
- Vendor specific data model overlay
- Semantic Interoperability Transformation



- HL7 C-CDA R2.1 represents majority of documents tested
- SME help to interpret errors is being provided to Participants and Vendor systems
- Feedback being provided to HL7 to improve the specifications & VSAC content



eHealth Exchange Market Differentiator



High Quality Data

We are the only nationwide network whose participants must pass rigorous content validation tests. This means all data exchanged is truly interoperable and usable.

97% of eHealth Exchange Participants have passed content testing requirements in the [eHealth Exchange Validation Plan](#).

Those who have not yet passed are highlighted on the Participants page of website with the following note:

NOTES:

Content Not Validated

<https://ehealthexchange.org/participants/>



HL7 C-CDA R2.1 Meaningful Use to USCDI v1.0 Background

- Meaningful Use 2015 Edition – Common Clinical Data Set (CCDS) – All but **12** Participants are Compliant today
 - CCDS includes 15 of the 18 data classes identified in USCDI v1.0
 - https://www.healthit.gov/sites/default/files/ccds_reference_document_v1_1.pdf
- 21st Century Cures Act transitions from CCDS to adopt USCDI v1.0
 - [see also [85 FR 25941](#)]
- USCDI V1.0 Added/Expanded these 3 Data Classes

Patient Demographics

- Current Address
- Previous Address
- Phone Number
- Phone Number Type
- Email Address

Clinical Notes

- Consultation Note
- Discharge Summary Note
- History & Physical
- Imaging Narrative
- Laboratory Report Narrative
- Pathology Report Narrative
- Procedure Note
- Progress Note

Provenance

- Author Time Stamp
- Author Organization



What is the USCDI

- The US Core Data for Interoperability, sets a minimal base standard for data elements that must be exchanged by compliant health information technology systems using specific, interoperable value sets.
- Allows receivers of clinical and administrative patient data to understand those data as intended by the sender of those data with no special effort.
- Not specific to a setting of care, a healthcare specialty, or a specific category of health IT user.
- Not specific to a particular content exchange standard (e.g., Health Level Seven International (HL7®) Consolidated Clinical Document Architecture (C-CDA), HL7® Fast Healthcare Interoperability Resources (FHIR®), HL7® V2, and NCPDP SCRIPT).
- Applies to the certification of health IT and certified health IT's ability to send and receive the Data Elements defined by USCDI. [see also [85 FR 25670](#)], [see also [85 FR 25804](#)], [see also [85 FR 25676](#)]

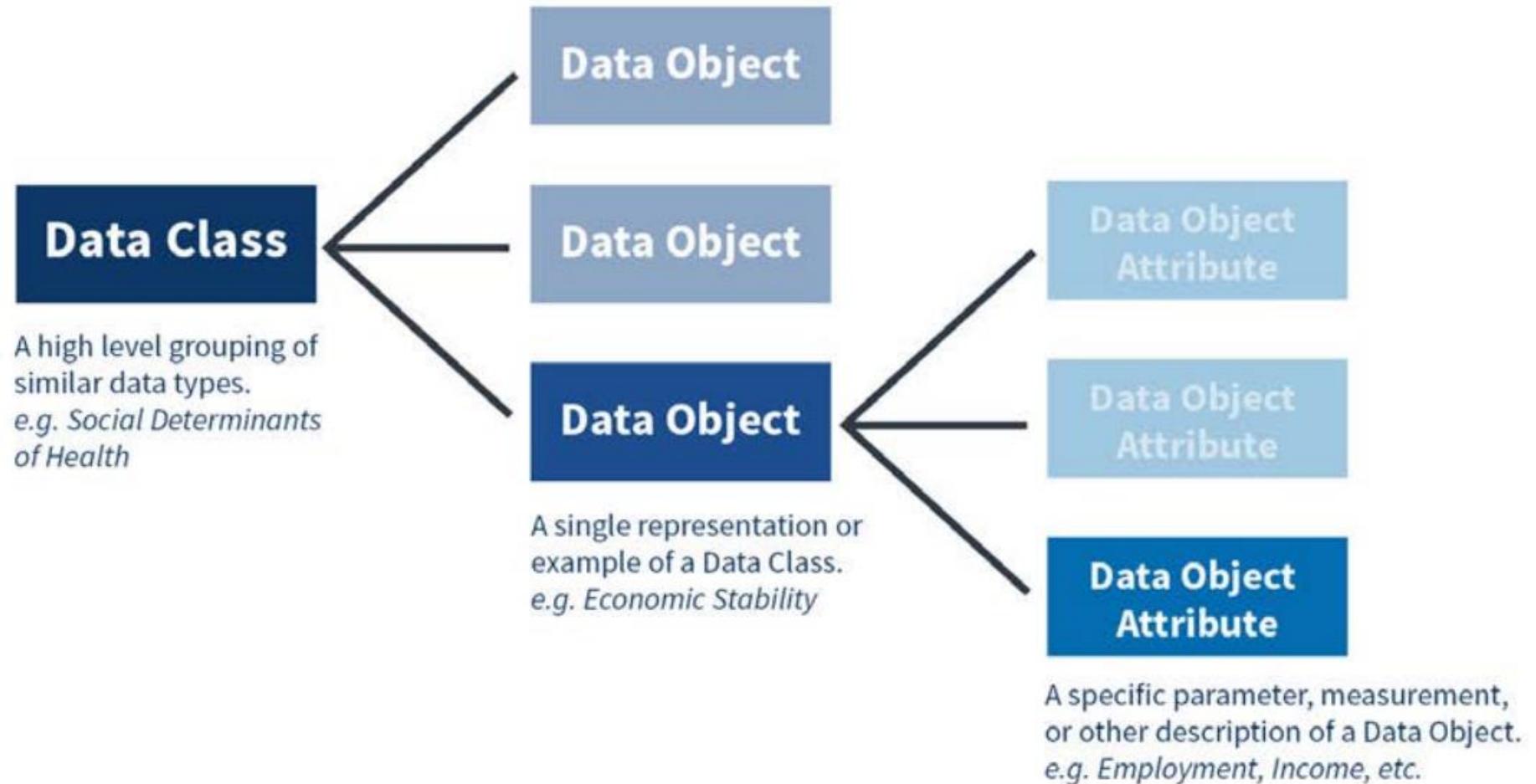


USCDI Content Requirements – TEFCA Impact

- Makes USCDI V1 mandatory for organizations operating under TEFCA.
- Data created or captured and sent on or after December 31, 2024 SHOULD conform to data classes, data elements, and vocabulary requirements in USCDI V1 or later.
- Legacy data captured and sent prior to December 31, 2024 MAY conform to USCDI data classes, data elements, and vocabulary requirements in USCDI V1 or later. a.
- As of January 1st, 2026, all information sent MUST conform to USCDI V3 data classes, data elements, and vocabulary requirements.



Hierarchy of Data Class





Clinical Data Quality and Standards Feedback Loop

- eHealth Exchange drives HL7 Specification Improvements Yearly since 2017
- HL7 C-CDA R2.1 Specification
 - Testing Tools Launched in 2018 with clean published specs
 - Pushed for two 2018 Errata Publications (May, December)
 - Errata continues to be contributed to HL7 as spec issues are identified
- Value Sets 
 - HL7 published Value Sets for industry for first time in 2018
 - Yearly Cadence for Value Set Updates
- ASTP/ONC published Draft USCDI v6 on January 14, 2025, and proposes to add 6 new data elements. Please read the [**Draft USCDI v6 standard document**](#) and the [**ASTP Standards Bulletin 25-1**](#) for details. ASTP/ONC is accepting comments here through May 12, 2025, at 11:59 PM ET.



Establishing Expiration Timelines for USCDI Versions over time

- Goal is to align and leverage regulations to push adoption
- ASTP released the [Health Data, Technology and Interoperability \(HTI-1\) Final Rule](#) that references USCDI V3 as required by January 1, 2026
- Health IT developers with a Health IT Module certified to any revised certification criterion must update their Health IT Modules and provide such update to their customers in accordance with the dates identified for each revised criterion and/or standard included in § 170.315.
 - [C-CDA Companion Guide Release 4.1](#)
 - [US Core Implementation Guide 6.1.0](#)
 - “Minimum Standards” Code Sets Updates (SNOMED, RxNorm, LOINC, NDC, etc.)



USCDI Version 3 – Required in Base EHRs



Allergies and Intolerances <ul style="list-style-type: none"> • Substance (Medication) • Substance (Drug Class) • Reaction 	Clinical Tests <ul style="list-style-type: none"> • Clinical Test • Clinical Test Result/Report 	Health Status/Assessments <ul style="list-style-type: none"> • Health Concerns → • Functional Status ★ • Disability Status ★ • Mental / Cognitive Status ★ • Pregnancy Status ★ • Smoking Status → 	Patient Demographics/Information <ul style="list-style-type: none"> • First Name • Last Name • Middle Name (including middle initial) • Suffix • Previous Name • Date of Birth • Date of Death ★ • Race • Ethnicity • Tribal Affiliation ★ • Sex • Sexual Orientation • Gender Identity • Preferred Language • Current Address • Previous Address • Phone Number • Phone Number Type • Email Address • Related Person's Name ★ • Related Person's Relationship ★ • Occupation ★ • Occupation Industry ★ 	Procedures <ul style="list-style-type: none"> • Procedures • SDOH Interventions • Reason for Referral ★
Assessment and Plan of Treatment <ul style="list-style-type: none"> • Assessment and Plan of Treatment • SDOH Assessment 	Diagnostic Imaging <ul style="list-style-type: none"> • Diagnostic Imaging Test • Diagnostic Imaging Report 			Provenance <ul style="list-style-type: none"> • Author Organization • Author Time Stamp
Care Team Member(s) <ul style="list-style-type: none"> • Care Team Member Name • Care Team Member Identifier • Care Team Member Role • Care Team Member Location • Care Team Member Telecom 	Encounter Information <ul style="list-style-type: none"> • Encounter Type • Encounter Diagnosis • Encounter Time • Encounter Location • Encounter Disposition 	Immunizations <ul style="list-style-type: none"> • Immunizations 		Unique Device Identifier(s) for a Patient's Implantable Device(s) <ul style="list-style-type: none"> • Unique Device Identifier(s) for a patient's implantable device(s)
Clinical Notes <ul style="list-style-type: none"> • Consultation Note • Discharge Summary Note • History & Physical • Procedure Note • Progress Note 	Goals <ul style="list-style-type: none"> • Patient Goals • SDOH Goals 	Laboratory <ul style="list-style-type: none"> • Test • Values/Results • Specimen Type ★ • Result Status ★ 		Vital Signs <ul style="list-style-type: none"> • Systolic blood pressure • Diastolic blood pressure • Heart Rate • Respiratory rate • Body temperature • Body height • Body weight • Pulse oximetry • Inhaled oxygen concentration • BMI Percentile (2 - 20 years) • Weight-for-length Percentile (Birth - 24 Months) • Head Occipital-frontal Circumference Percentile (Birth - 36 Months)
	Health Insurance Information ★ <ul style="list-style-type: none"> • Coverage Status ★ • Coverage Type ★ • Relationship to Subscriber ★ • Member Identifier ★ • Subscriber Identifier ★ • Group Number ★ • Payer Identifier ★ 	Medications <ul style="list-style-type: none"> • Medications • Dose ★ • Dose Unit of Measure ★ • Indication ★ • Fill Status ★ 	Problems <ul style="list-style-type: none"> • Problems • SDOH Problems/Health Concerns • Date of Diagnosis • Date of Resolution 	

★ New Data Classes and Elements → Data Element Reclassified

Content Testing Frequently Asked Questions

<https://ehealthexchange.org/testing-program/content-testing/>

Sequoia Interoperability Testing Platform (ITP) Access

Is there a cost to access the Sequoia ITP Content Testing Validators?

- The Content Testing Tools are free for use by eHealth Exchange Participants and their vendors.
- The Content Testing Tools are free for use by Sequoia Project Member Organizations.
- If your organization does not meet either of the two criteria above, a yearly subscription can be obtained. Please send an email to testing@sequoiaproject.org for more information.

How do I get access to the Sequoia Interoperability Testing Platform (ITP)?

I have had a staff member who previously conducted our content testing leave our organization. How do I request for users to be removed from the Sequoia ITP?

I have lost my password for the Sequoia ITP, how do I reset it?

What is the URL for the Content Testing Tooling component of the ITP?

Documentation & Value Sets

How do I gain access to the eHealth Exchange Wiki to access the content testing documentation?

I have lost my record of the permanent link references my organization submitted. How can I retrieve the permanent links previously provided?

Where can we find the value sets or codes used by the content testing tooling?

Other

My organization has implemented a Meaningful Use certified product. Why does the Sequoia ITP show errors that the Edge Testing Tool (ETT) and/or the Standards Implementation & Testing Environment (SITE) does not.

I am concerned that this initiative is taking quite a bit of time from HIE and EHR vendors, why do I need to expend the resource time to remediate issues identified?

My testing report is only providing information for the first 50 errors and I have more than that according to my testing summary. How do I get information for all the errors to review?

Process

How do I submit my results once testing is completed?

The Content Testing Tooling was updated, what do I need to do to rescore my testing previously submitted?

We have completed our revalidation with the tooling update, do we need to officially resubmit our results, or does Sequoia watch for the results via the tool?

How will I know which participants have successfully passed testing?

How long will we have to remediate issues found in the content testing program?

What happens if my vendor will not be able to remediate issues by the April 30, 2021 date?

What is meant by a remediation plan?

Can I use PHI in the content testing submitted?

How do I report defects found within the tooling?

Where can I find known issues that may have already been reported for the Sequoia ITP?

What is required to be remediated? Are only Errors required? What about warnings?

I tested my content against the CDA R2 validator, why did you not accept this for formal testing?



HL7 Value Set Updates Published Annually

The National Library of Medicine announced the Value Set Authority Center (VSAC) publication and downloadable files of the HL7 Consolidated Clinical Document Architecture (C-CDA) R2.1 value sets, authored by the HL7 Terminology group

- See the FAQ section [here](#) in [Documentation and Value Sets section](#) for more information on ways to access & download the value sets

Where can we find the value sets or codes used by the content testing tooling?

- You can find all the value sets available here: <https://vsac.nlm.nih.gov/>. This site does require a UMLS license/account.
- To obtain a UMLS license you need to reference the screenshot below to request an account:
- [Watch this video](#) to learn how to download value sets.



Data Usability

Interoperability Matters: Data Usability Workgroup

Data Usability Taking Root Initiative



Website, Meeting and Workgroup Logistics

- Register for the Workgroup
- Calendar Downloads
- Meeting Notes



WEBINAR

Workgroup Meetings, First Thursday of Each Month at 4:00 p.m. ET

The workgroup meets on the first Thursday of each month at 4:00 p.m. ET. We will strive to post the meeting materials for each meeting the day before, and upload meeting recordings within 24 hours.

REGISTER ADD TO CALENDAR

Interoperability Matters » Data Usability Workgroup

INTEROPERABILITY MATTERS

Data Usability Workgroup

The Sequoia Project has assembled experts across a wide range of different stakeholders to develop specific and pragmatic implementation guidance on clinical content for healthcare stakeholders in order to facilitate health information exchange. This guidance, in the form of implementation guides covering identified priority use cases, will be readily adoptable by health information exchange vendors, implementers, networks, governance frameworks, and testing programs.

JOIN WORKGROUP WORKGROUP ROSTER

VIEW THE DATA USABILITY WORKGROUP IMPLEMENTATION GUIDE, VERSION 1.0

Meeting Materials and Recordings

2025 2023 - 2024 2020 - 2022

▶ February 6: Meeting Notes

<https://sequoiaproject.org/interoperability-matters/data-usability-workgroup/>
 Interopmatters@sequoiaproject.org

Meeting Logistics and Timeline

- In 2025, the Data Usability Workgroup will begin a quarterly meeting cadence on the following dates:
 - February 6
 - April 3
 - ★ August 7
 - October 2
- This will allow industry to familiarize themselves with the new V2.0 before we get too ahead of ourselves for the expected **18-month** adoption expectations.
- Calendar invites are available [here](#) for download

Data Usability Implementation Guide V2.0

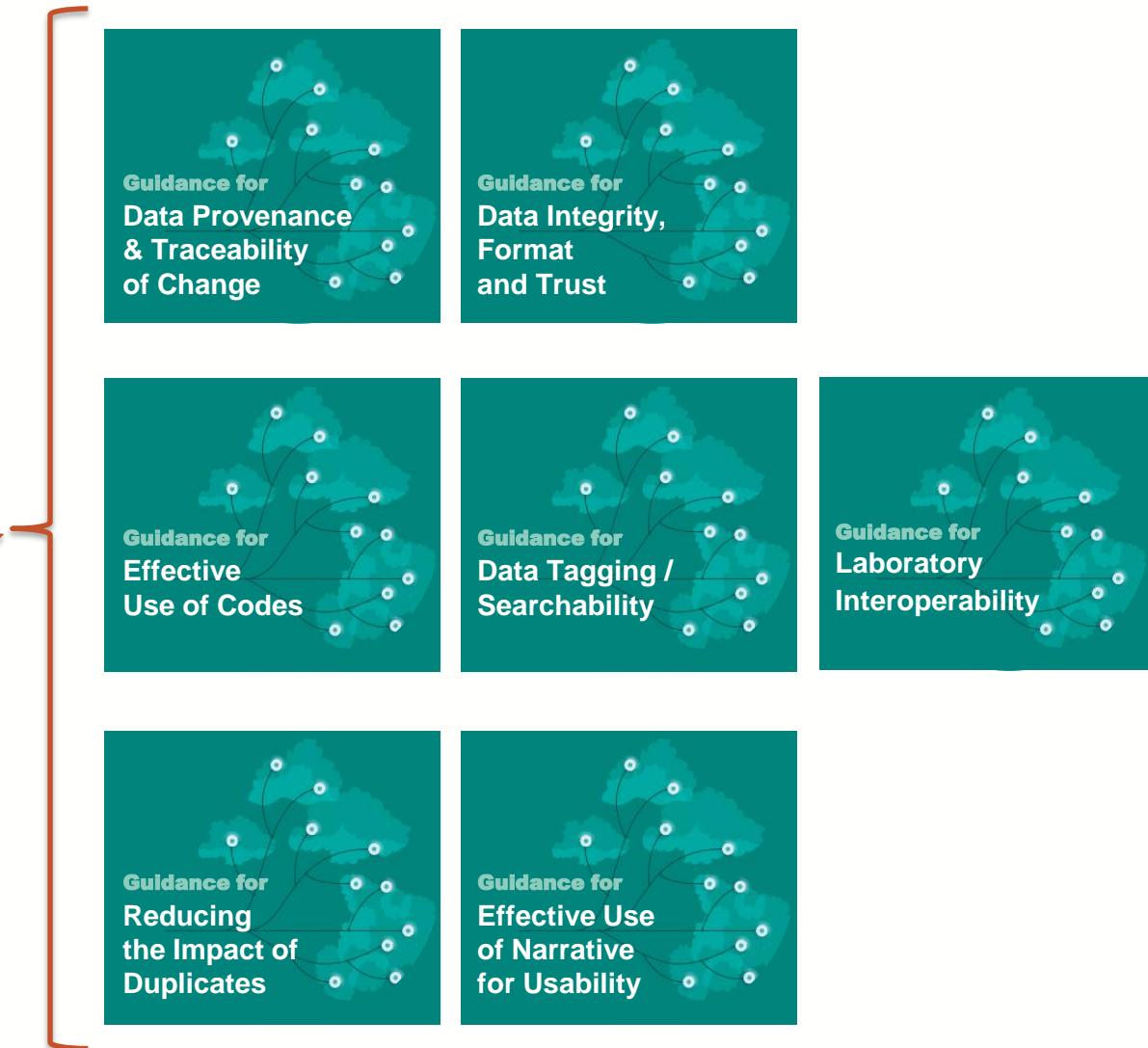
DUWG Implementation Guide Version 2.0 – Summary

Key changes in this final publication included:

- Added guidance for receiving systems in addition to sending systems
- Advancing the baseline requirements from USCDI V1 (Problem, Allergy, Medications, Immunizations ONLY) to all data classes within USCDI V3
 - ASTP/ONC has updated the USCDI standard in § 170.213 by adding **USCDI Version 3 (v3)** and establishing a January 1, 2026, expiration date for USCDI v1 (July 2020 Errata) for purposes of the Certification Program.
- Expanded guidance to be technology agnostic with added requirements for HL7® FHIR®, HL7 v2.x and HL7 C-CDA across the topic categories
- Added an additional topic category for laboratory

Table of Contents

- Executive Summary & Phases Timeline
 - Phase 1 - Administration & Prioritization
 - Phase 2 - IG Development
 - Phase 3 - IG Public Comment
 - Phase 4 - IG Publication
- Statement of Intent
- Sections/Chapters
 - Seven Topic Categories
 - Guidance with SHALL, SHOULD, MAY
- References
- Appendix A – High Priority Lab Results
- Appendix B – A Priority list of documents for information sharing



Data Usability Work Group

For more information:

www.sequoiaproject.org/interoperability-matters/data-usability-workgroup/



(571) 327-3640



Interopmatters@sequoiaproject.org

Convene



Collaborate



Interoperate

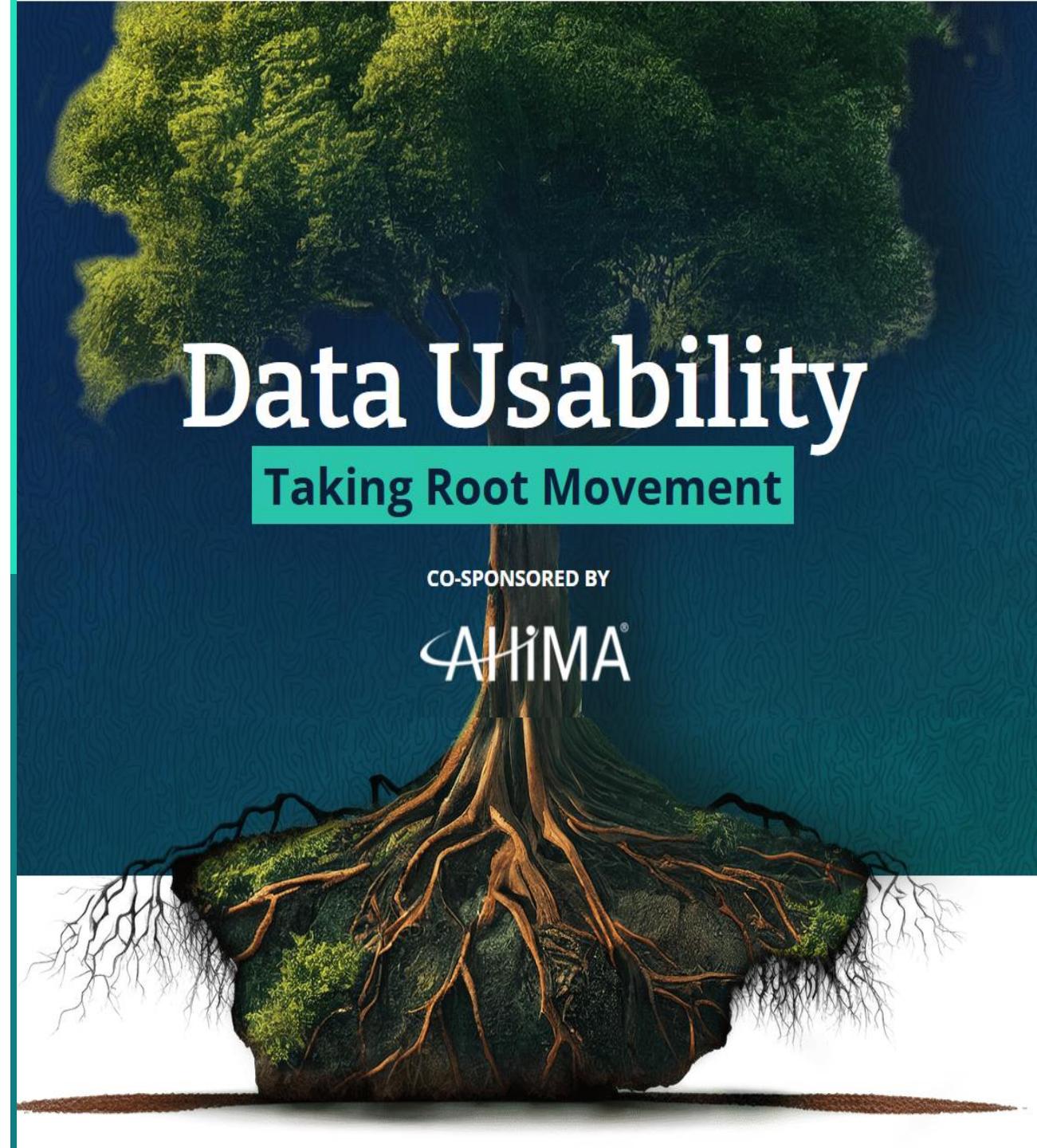


**Thank You for your support of
Interoperability Matters!**

Community of Practice Update

Next Meeting April 23, 2025

the
sequoia[®]
project



What is the difference between the **Data Usability Taking Root Movement** and the **Data Usability Workgroup**?



Organizations that have pledged to participate!



Draft Readiness Checklist Discussion

Congratulations on committing to improve the usability of health data! Your willingness to implement the DUGV1.0 will set an example for others to follow. We appreciate and support your leadership and innovation.

Data Usability Implementation Guide Version 1.0: Compliance Readiness Checklist
© 2024 The Sequoia Project. All rights reserved.

FAQs

What is the purpose of the Compliance Readiness Checklist?
The Sequoia Project Data Usability Taking Root Compliance Readiness Checklist will be used to assess an Implementer or Supporter's readiness to adopt the guidance published in the Data Usability Implementation Guide Version 1.0. This Checklist can be used within your organization or externally with customers, partners, and other stakeholders.

How do I complete the Compliance Readiness Checklist?
There are two checklists. One for Integrators and Networks and the other for EHR and HIT system organizations. See the corresponding tabs below. Using the tab that most closely aligns with your organization, answer the Yes/No questions or choose N/A if the question is not applicable. There is a Notes column that allows you to track questions or post additional information.

Who do I contact with questions?
Contact Didi Davis, VP of Informatics, Conformance & Interoperability at The Sequoia Project | ddavis@sequoiaproject.org

How do I submit the completed checklist?
Email the completed checklist to TakingRoot@sequoiaproject.org

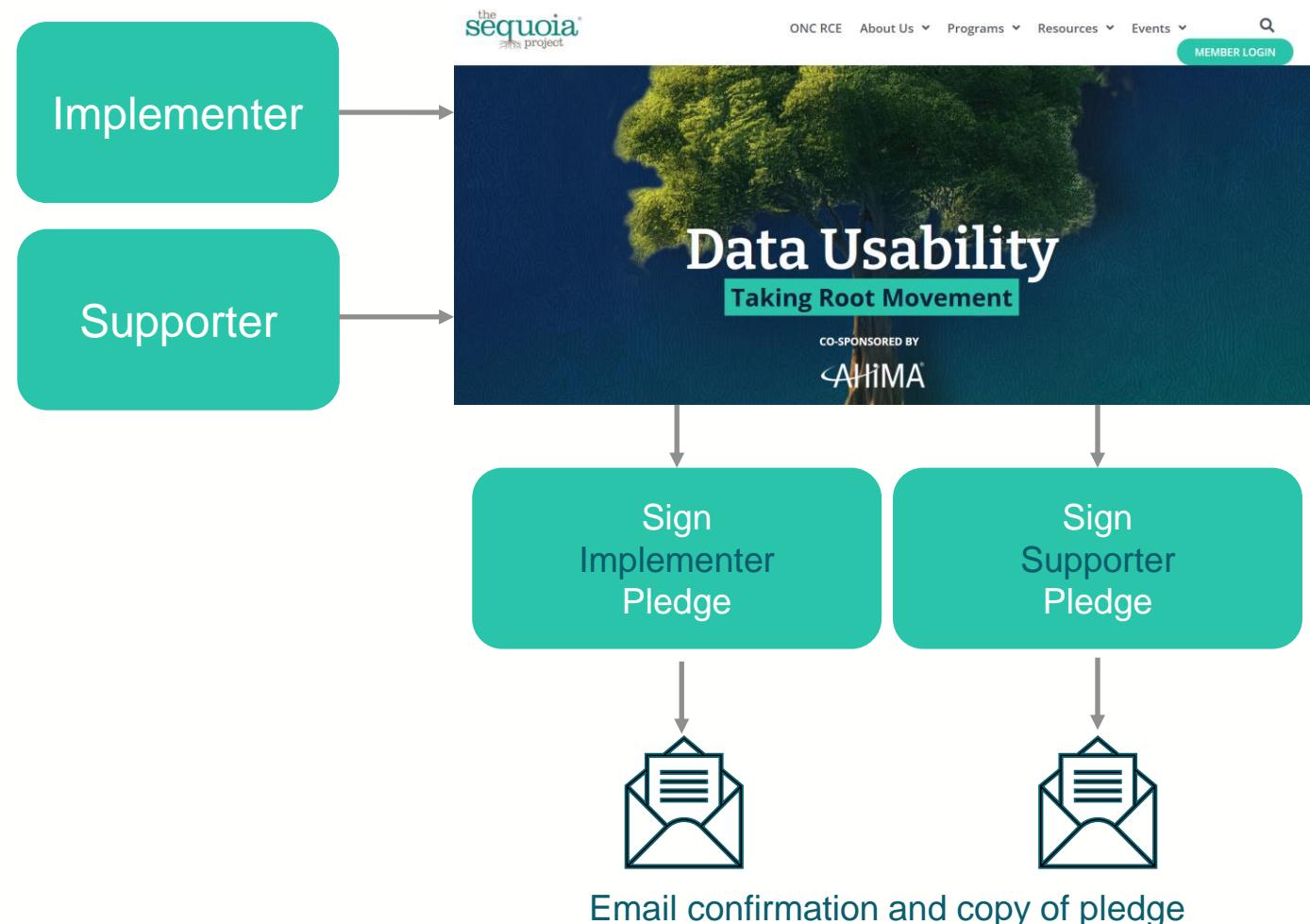
Where can I find the Data Usability IG V1.0?
<https://sequoiaproject.org/wp-content/uploads/2023/08/2022-12-14-Sequoia-DUWG-IG-Version-1-1.pdf>

Instructions IntegratorNetwork EHR/HIT System +

Data Usability Implementation Guide Version 1.0: Compliance Readiness Checklist EHR and HIT Systems				
Category	Readiness Description	Yes/No	N/A	Notes
General Project Management	Do you have an Executive Sponsor within your organization to support your pledge? Have you identified key resources needed for Taking Root Usability in all projects? Have you confirmed key resource availability to establish a project plan for deployment? Is your Primary EHR vendor a Data Usability Implementer? Is your organization a Data Usability Supporter?			
General Sending Data	Does your organization send clinical data to external organizations? Apply this checklist to each data source your organization creates data to send. Have you identified all provider organizational partners that you send C-CDA documents to? Have you identified all public health organizational partners which you send C-CDA documents to?			
General Receiving Data	Does your organization receive clinical data from external organizations? You may want to encourage partner organizations that send you data to review their compliance to this readiness checklist as a joint project. Have you identified all provider organizational partners that you receive C-CDA documents from? Have you identified all public health organizational partners that you receive C-CDA documents from?			
General USCDI v1 or v2	Does your system comply with the USCDI version currently required for certification? You can search the Certified Health IT Product List here: https://cchl.healthit.gov/#/search ONC HIT-1 requirement for Certified HIT modules to support USCDI v3 by 1/1/26			
Data Provenance and Traceability of Changes: Sent	Does your organization send author organization and time stamps in all document headers to external requestors/providers and public health partners? Does your organization send author organization and time stamps in all allergy sections sent to external providers and public health partners? Does your organization send author organization and time stamps in all immunizations sections sent to external partners? Does your organization send author organization and time stamps in all medications sections sent to external partners? Does your organization send author organization and time stamps in all problems sections sent to external partners? Does your vendor technology have the capability to send the author person for a data entry item when known?			
Data Provenance and Traceability of Changes: Received	Does your organization display author organization and time stamps for data received from external partners to your internal users for all data sources at the document header level? Does your organization display author organization and time stamps for data received from external partners to your internal users at the entry level for allergies ? Does your organization display author organization and time stamps for data received from external partners to your internal users at the entry level for immunizations ? Does your organization display author organization and time stamps for data received from external partners to your internal users at the entry level for medications ? Does your organization display author organization and time stamps for data received from external partners to your internal users at the entry level for problems ? Does your vendor technology have the capability to display author person for the data entry items covered by the Data Usability IG 1.0 when received from a partner organization?			
	Does your organization preserve/transmit codes received for all Labs? For Labs, does your organization convert non-LOINC codes back into LOINC prior to sending? If no associated code value is contained in data received, does your organization send the free text information from originating source?			
	Does your HIT system convert and share lab results (Priority Labs Appendix A only) in CDA documents with other organization's HIT systems? Does your organization convert and share allergy information (allergens priority list) with other organization's HIT systems?			

<https://sequoiaproject.org/wp-content/uploads/2024/12/Sequoia-Data-Usability-IG-v1.0-Readiness-Checklist.xlsx>

Pledge Process – Open NOW!



Those who have pledged will have password-protected access to Data Usability Taking Root Resources on the Sequoia website

<https://sequoiaproject.org/data-usability-taking-root-movement/>

CALL to ACTION:

- Consider Pledging to be a Supporter or Implementer of the Data Usability Taking Root Initiative
- Share/Socialize this information internally to our organization or with your partners/peers

Contact Us

Thank you for your interest in The Sequoia Project's new **Data Usability Taking Root** Initiative.

If you would like to get in touch you can reach us at:



takingroot@sequoiaproject.org

**To join the Community of Practice Roundtables, please sign up as a Supporter, Implementer or Sponsor here:
<https://sequoiaproject.org/data-usability-taking-root-movement/>**

Hub ITP Content Testing Tooling Overview



eHealth Exchange™



Sequoia Interoperability Testing Platform (ITP)

HL7 CDA/C-CDA Testing for CCDS/USCDI – Home Screen

External Validation Service Front-end

If no menu is visible please log in to access the services

[Home](#)

 EVS Version 6.0

*****eHealth Exchange Content Testing ANNOUNCEMENT:*****

The tools were last updated in February 2024 to remediate issues previously reported by participants.

All information related to the 2018 eHealth Exchange Content Testing Program can be found here <https://ehealthexchange.org/testing-program/content-testing/>

The User Guide, video and more information can be found at [the eHealth Exchange website](#).

Questions should be emailed to testing@ehealthexchange.org.

- Please note that you need to be logged into this tooling in the upper right corner in order to perform content testing.
- This tool is a user-friendly front-end to the validation web services offered by The Sequoia Project as part of the Interoperability Testing Platform (ITP).
- Value Sets reported for eHealth Exchange Content Testing come from the [Value Set Authority Center \(VSAC\)](#) hosted by the National Library of Medicine last updated August 13, 2024.

As of July 28, 2021, a validator was added to the drop down list under model based validators for testing against the USCDI version 1. This validator is provided for awareness, but testing content is voluntary and passing this validator is not required by eHealth Exchange Participants.

KNOWN ISSUES

- CONF:1198-8476 - NUBC codes are licensed from AMA and the validator is missing some valid codes. Errors should be ignored for this conformance requirement. (SEQUOIA-373) & (SEQUOIA-382)
- CONF:81-7322 - Errors with this conformance reference should be labeled as CONF:1198-7365 to match the specification reference (SEQUOIA-442)
- CONF:1098-7419 - Validator is missing the Substance Reactant for Intolerance Value set 2.16.840.1.113762.1.4.1010.1 - Any errors reported for this should be ignored (SEQUOIA-456)
- CONF:1198-32928 - This error should be a warning, and is also mislabeled. Should be CONF:81-32928

To request user access please email testing@ehealthexchange.org
<https://hub-itp-val.ehealthexchange.org/evs/home.seam>



Content Validator Tools Available after Login

External Validation Service Front-end

IHE Content Validation Add-ons Administration dididavis / eHx

Home HIT C-CDA Validate Validation logs Statistics

the sequoia project® EVS Version 6.0

*****eHealth Exchange Content Testing ANNOUNCEMENT:*****

The tools were last updated in February 2024 to remediate issues previously reported by participants.

All information related to the 2018 eHealth Exchange Content Testing Program can be found here <https://ehealthexchange.org/testing-program/content-testing/>

The [User Guide](#), video and more information can be found at [the eHealth Exchange website](#).

Questions should be emailed to testing@ehealthexchange.org.

- Please note that you need to be logged into this tooling in the upper right corner in order to perform content testing.
- This tool is a user-friendly front-end to the validation web services offered by The Sequoia Project as part of the Interoperability Testing Platform (ITP).
- Value Sets reported for eHealth Exchange Content Testing come from the [Value Set Authority Center \(VSAC\)](#) hosted by the National Library of Medicine last updated August 13, 2024.

As of July 28, 2021, a validator was added to the drop down list under model based validators for testing against the USCDI version 1. This validator is provided for awareness, but testing content is voluntary and passing this validator is not required by eHealth Exchange Participants.

KNOWN ISSUES

- CONF:1198-8476 - NUBC codes are licensed from AMA and the validator is missing some valid codes. Errors should be ignored for this conformance requirement. (SEQUOIA-373) & (SEQUOIA-382)
- CONF:81-7322 - Errors with this conformance reference should be labeled as CONF:1198-7365 to match the specification reference (SEQUOIA-442)
- CONF:1098-7419 - Validator is missing the Substance Reactant for Intolerance Value set 2.16.840.1.1137621.4.1010.1 - Any errors reported for this should be ignored (SEQUOIA-456)
- CONF:1198-32928 - This error should be a warning, and is also mislabeled. Should be CONF:81-32928



Validate CDA Documents

External Validation Service Front-end

IHE Content Validation Add-ons Administration dididavis / eHx ▾

Validate CDA documents

Content selection

Current file: DemoCCDR2.1-20240228.xml

Show Content

Validator selection

Select a validator :

Please select...

CDAGenerator

HL7 - C-CDA R2.1 - Meaningful Use Stage 3

HL7 - C-CDA R2.1 - USCDI

HL7 - CDA Release 2

Validate Get XML Request

Reset



Validation Result

External Validation Service Front-end

Sequoia ▾ Administration ▾ didi / SEQUOIA ▾

Validation result

Information

File Name	DemoCCD 20161105.xml Download
OID :	1.3.6.1.4.1.12559.11.28.14005
Schematron :	N/A (Version N/A)
Schematron Validation ...	N/A
Validation Date :	7/31/18 4:50:25 PM (CEST GMT+0200)
Model Based Validator :	HL7 - C-CDA R2.1 - Meaningful Use Stage 3 (Version N/A)
Model Based Validation...	FAILED Download Share Edit
Permanent link :	https://gazellecontent.sequoiaproject.org/EVSClient/detailedResult.seam?type=CDA&oid=1.3.6.1.4.1.12559.11.28.14005
Data Visibility :	Private - Owned By didi / SEQUOIA

[Make this result public](#) [share this result](#) [Validate again](#) [Perform another validation](#)

Validation Results

Model based validation [Scorecard](#)

Well-formedness PASSED

The document you have validated is supposed to be a well-formed document. The validator has checked if it is well-formed, results of this validation are gathered in this section.

The document is well-formed

Tree of the templates used in this document
Click on template ID to filter the list of notifications

Show Templates

2.16.840.1.113883.10.20.22.1.1 - USRealmHeaderV3
2.16.840.1.113883.10.20.22.1.2 - ContinuityofCareDocu...

2.16.840.1.113883.10.20.22.2.6.1 - AllergiesandIntoler...

Section/Entry Template Navigation

The document is well-formed

Schema Validation detailed Result **PASSED**

Your document has been validated with the appropriate schema, here is the detail of the validation outcome.

The document is valid regarding the schema

Gazelle Objects Checker validator results **FAILED**

Summary of checks 5 44 581

Severity	Test	Location	Description	Type
Errors	ccda212278	/ClinicalDocument/component/structuredBody/component[0]/section/entry[0]/act/entryRelationship[0]/observation/entryRelationship[1]/observation	In Severity Observation (V2), the code of /hi7:observation[hi7:templateId/@root='2.16.840.1.113883.10.20.22.4.8']/hi7:value SHALL be from the valueSet 2.16.840.1.113883.3.88.12.3221.6.8 (flexibility : C-CDA R2.1 2020-07-13) (Item : CONF:1098-7356) [Constraint...] [Assertion...]	Vocabulary
Warnings	ccda212303	/ClinicalDocument/component/structuredBody/component[0]/section/entry[0]/act/entryRelationship[0]/observation/entryRelationship[2]/observation	In Reaction Observation (V2), in /hi7:observation[hi7:templateId/@root='2.16.840.1.113883.10.20.22.4.9'], the element(s) hi7:code SHALL not have nullFlavor (mandatory) (Item : CONF:1098-16851) [Constraint...] [Assertion...]	Mandatory
Infos	ccda212312	/ClinicalDocument/component/structuredBody/component[0]/section/entry[0]/act/entryRelationship[0]/observation/entryRelationship[2]/observation	In Reaction Observation (V2), the code of /hi7:observation[hi7:templateId/@root='2.16.840.1.113883.10.20.22.4.9']/hi7:value SHALL be from the valueSet 2.16.840.1.113883.3.88.12.3221.7.4 (flexibility : C-CDA R2.1 2020-07-13) (Item : CONF:1098-7355) [Constraint...] [Assertion...]	Vocabulary
Unknowns	ccda211597	/ClinicalDocument/component/structuredBody/component[1]/section/entry[1]/substanceAdministration/consumable/manufacturedProduct	In Medication Information (V2), the code of /hi7:manufacturedProduct[hi7:templateId/@root='2.16.840.1.113883.10.20.22.4.23']/hi7:manufacturedMaterial/hi7:code SHALL be from the valueSet 2.16.840.1.113762.14.1010.4 (flexibility : C-CDA R2.1 2020-07-13) (Item : CONF:1098-7412) [Constraint...] [Assertion...]	Vocabulary
Reports	ccda211614	/ClinicalDocument/component/structuredBody/component[5]/section/entry[0]/organizer	In Vital Signs Organizer (V3), /hi7:organizer[hi7:templateId/@root='2.16.840.1.113883.10.20.22.4.26']/hi7:code SHALL contain at least ONE hi7:translation (Item : CONF:1198-32743) [Constraint...] [Assertion...]	Cardinality
Null Flavor Check	NullFlavorChecker	/ClinicalDocument/component/structuredBody/component[1]/entry/substanceAdministration[0]/consumable/manufacturedProduct/manufacturedMaterial/code	In /ClinicalDocument/component/structuredBody/component[1]/entry/substanceAdministration[0]/consumable/manufacturedProduct/manufacturedMaterial/code nullFlavor is defined but the element still defines attributes and sub-elements [Constraint...]	Null Flavor Check
Fixed Value	NullFlavorChecker			
Datatype	NullFlavorChecker			
Context	NullFlavorChecker			
Vocabulary	NullFlavorChecker			
Mandatory	NullFlavorChecker			
Cardinality	NullFlavorChecker			
Reset filters	NullFlavorChecker			

Show Templates

- 2.16.840.1.113883.10.20.22.1.1 - USRealmHeaderV3
- 2.16.840.1.113883.10.20.22.1.2 - ContinuityofCareDocumentCCD V3
- 2.16.840.1.113883.10.20.22.2.6.1 - AllergiesandIntolerancesSectionentriesrequiredV3
- 2.16.840.1.113883.10.20.22.4.30 - AllergyConcernActV3
- 2.16.840.1.113883.10.20.22.4.7 - AllergyIntoleranceObservationV2
- 2.16.840.1.113883.10.20.22.4.28 - AllergyStatusObservation
- 2.16.840.1.113883.10.20.22.4.8 - SeverityObservationV2
- 2.16.840.1.113883.10.20.22.4.9 - ReactionObservationV2
- 2.16.840.1.113883.10.20.22.2.1 - MedicationsSectionentriesoptionalV2
- 2.16.840.1.113883.10.20.22.2.1.1 - MedicationsSectionentriesrequiredV2
- 2.16.840.1.113883.10.20.22.4.16 - MedicationActivityV2
- 2.16.840.1.113883.10.20.22.4.23 - MedicationInformationV2
- 2.16.840.1.113883.10.20.1.47 - UNKNOWN
- 2.16.840.1.113883.10.20.1.57 - UNKNOWN
- 2.16.840.1.113883.10.20.22.4.16 - MedicationActivityV2
- 2.16.840.1.113883.10.20.22.4.23 - MedicationInformationV2
- 2.16.840.1.113883.10.20.1.47 - UNKNOWN
- 2.16.840.1.113883.10.20.1.57 - UNKNOWN
- 2.16.840.1.113883.10.20.22.2.5.1 - ProblemSectionentriesrequiredV3
- 2.16.840.1.113883.10.20.22.4.3 - ProblemConcernActV3
- 2.16.840.1.113883.10.20.22.4.4 - ProblemObservationV3
- 2.16.840.1.113883.10.20.22.4.6 - ProblemStatus
- 2.16.840.1.113883.10.20.22.2.3.1 - ResultsSectionentriesrequiredV3
- 2.16.840.1.113883.10.20.22.4.1 - ResultOrganizerV3
- 2.16.840.1.113883.10.20.22.4.2 - ResultObservationV3
- 2.16.840.1.113883.10.20.22.4.1 - ResultOrganizerV3
- 2.16.840.1.113883.10.20.22.4.2 - ResultObservationV3
- 2.16.840.1.113883.10.20.22.2.17 - SocialHistorySectionV3
- 2.16.840.1.113883.10.20.22.4.38 - SocialHistoryObservationV3
- 2.16.840.1.113883.10.20.22.4.78 - SmokingStatusMeaningfulUseV2
- 2.16.840.1.113883.10.20.22.4.38 - SocialHistoryObservationV3
- 2.16.840.1.113883.10.20.22.2.4.1 - VitalSignsSectionentriesrequiredV3
- 2.16.840.1.113883.10.20.22.4.26 - VitalSignsOrganizerV3
- 2.16.840.1.113883.10.20.22.4.27 - VitalSignObservationV2
- 2.16.840.1.113883.10.20.22.4.27 - VitalSignObservationV2



Issue in Context within XML

Prettify content View lines numbers

```
403   </text>
404   <statusCode code="active"/>
405   <effectiveTime xsi:type="IVL_TS">
406     <low value="20090109215300.000-0600"/>
407     <high nullFlavor="NI"/>
408   </effectiveTime>
409   <routeCode code="C38288" codeSystem="2.16.840.1.113883.3.26.1.1" codeSystemName="NCI Thesaurus">
410     <originalText>Oral</originalText>
411   </routeCode>
412   <doseQuantity unit="{tablet}" value="1"/>
413   <consumable typeCode="CSM">
414     <manufacturedProduct classCode="MANU">
```

↑ (4/250)	Test Location	ccda211597 /ClinicalDocument/component/structuredBody/component[1]/section/entry[1]/substanceAdministration/consumable/manufacturedProduct
	Description	In Medication Information (V2), the code of /hl7:manufacturedProduct[hl7:templateId/@root=2.16.840.1.113883.10.20.22.4.23]/hl7:manufacturedMaterial[hl7:code SHALL be from the valueSet 2.16.840.1.11376 2.1.4.1010.4 (flexibility : C-CDA R2.1 2020-07-13) (item : CONF:1098-7412)[Constraint...] [Assertion...]
	Type	Vocabulary

```
415   <templateId root="2.16.840.1.113883.10.20.22.4.23"/>
416   <manufacturedMaterial classCode="MMAT" determinerCode="KIND">
417     <code code="203195" codeSystem="2.16.840.1.113883.6.88" codeSystemName="RxNorm" displayName="Penicillin V Potassium">
418       <originalText>
419         <reference value="#MEDPROD48586274"/>
420       </originalText>
421     </code>
422     <manufacturedMaterial>
423     </manufacturedProduct>
424     </consumable>
425     <author>
426       <time value="20130710215810.000-0500"/>
427       <assignedAuthor classCode="ASSIGNED">
428         <id nullFlavor="NI"/>
429         <addr nullFlavor="UNK"/>
430         <assignedPerson>
431           <name>
432             <given nullFlavor="NA"/>
433             <family nullFlavor="NA"/>
434           </name>
435           <assignedPerson>
436             </assignedAuthor>
437           </author>
438           <entryRelationship typeCode="REFR">
439             <observation classCode="OBS" moodCode="EVN">
440               <templateId root="2.16.840.1.113883.10.20.1.47"/>
441               <templateId root="2.16.840.1.113883.10.20.1.57"/>
442               <code code="33999-4" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" displayName="Status"/>
443               <statusCode code="active"/>
444               <value nullFlavor="UNK" xsi:type="CD">
445                 <originalText>active</originalText>
```

Scorecard Summary Review

External Validation Service Front-end

IHE Content Validation Add-ons Administration dididavis / eHx

Validate CDA documents

Information

File Name: DemoCCDR2.1-20240228.xml

OID: 1.3.6.1.4.1.12559.11.28.5.1986

Validation Date: 4/21/25 3:09:07 PM (EDT GMT-0400)

CDAGenerator: HL7 - C-CDA R2.1 - Meaningful Use Stage 3 (Version 20220806)

Validation Results: **DONE FAILED**

Permanent link: <https://hub-itp-val.ehealthexchange.org/evs/report.seam?oid=1.3.6.1.4.1.12559.11.28.5.1986>

Data Visibility: Private - Owned By dididavis / eHx

Make this result public share this result Validate again Perform another validation

Validation Results Scorecard

Scorecard

Contextual information

Validation identifier	1.3.6.1.4.1.12559.11.28.5.1986
Statistics identifier	1.3.6.1.4.1.12559.11.38.2.129
Validation tool	Gazelle CDA Validation (version: 20220806)
Statistic tool	Gazelle CDA Validation (version: 2.2.3)
Effective date	2025-04-21 15:15:46 (-0400)

Constraint scoring Templates scoring

This section of the scorecard gives you indications regarding the constraints which have been applied on your document during the validation process. Because some constraints are used several times, the scorecard also shows you how many distinct constraints were executed.

Summary

Summary of outcomes

5	44	581
---	----	-----

The overall conformity progress bar below summarizes the conformity of your document in percentages, differentiating passed executed constraints from other statuses of execution.

Overall conformity

7.8%	92.2%
------	-------

Conformity of unique constraints

29	454	2183
----	-----	------

Types of constraints

Cardinality	38	370	Context	19
Datatype	10	Fixed value	1	
Mandatory	105	Null Flavor Check	4	
Not defined	74	Not Defined	2	

©eHealth Exchange. All rights reserved.

HTML View of Content

Patient
Documentation Of
Author
Author

Legal: Mr. Adam Frankie EVERMAN
Care provision, Encounter for Problem, Date/Time: November 14, 2014, Performer: Hearty SIXER MD
Doctor SECOND MD, Authored On: June 7, 2013, 00AM
EHR Software Name, Organization: EHR Corporation, Authored On: July 17, 2013, 11:44:46AM -0500

Patient-ID: 12345 (Example) Date of Birth: November 25, 1954 (60yr) Gender: Male

[Table of Contents](#) Collapse All

▼ ALLERGIES, ADVERSE REACTIONS, ALERTS

Substance	Reaction	Severity	Status
Codine	Hives	Fatal	Active

▼ Medications

Medication	Instructions	Start Date	Stop Date	Status
Percoxit 5/325mg Oral Tablet (acetaminophen / oxycodone)	1 tablet PO QID	07/10/2013		active
Penicillin V Potassium	Penicillin G 250 mg orally every 6 to 8 hours	07/15/2013		active

▼ PROBLEMS

Problem	Code	Status	Onset Date	Resolution Date
Tuberculosis of lung	A15.0 (ICD-9 CM)	Active	Mr. Adam Everman November 25, 1954 Male Work Not Hispanic or Latino Primary Home: 17 Davis Rd. Blue Bell, MA 01238, US Tel: (774)955-1232 Fax: (774)955-1232	12345-216-8401.1.113883.19

▼ Results

Date	Test	Value	Reference Range	Interpretation
02/22/2013 10:39	WBC	7.6 K/uL	4-10 K/uL	Normal
02/22/2013 10:39	Basophils	0.5%	0.0-1.2%	Normal
02/22/2013 10:39	Hemoglobin	5.5	10-16 g/dL	Normal

▼ SOCIAL HISTORY

Social History Element	Description
smoking	1 pack per day
Smoking Status: Former smoker	2014
Alcohol consumption	None

▼ VITAL SIGNS

Date / Time:	Test	Value	Unit	Entered By
Weight:		88 lbs	kg	Nurse Tertiary
Height:		185 cm	cm	Work Place: 3333 StreetName St. Silver Spring, MD 20901, US Tel: +1(301)333-3333
BMI		25.7	kg/m2	Physician Fing, MD signed at June 7, 2013, 00:00:00

▼ IMMUNIZATIONS

Vaccine	Date
Influenza virus vaccine, inhaled	Nov 2014
Influenza virus vaccine, inhaled	Nov 2014

▼ PLAN OF CARE

Planned Activity	Planned Date
Colonoscopy	April 21, 2015

▼ Procedures

Description	Date and Time (Range)
Laparoscopic appendectomy	(03 Feb 2014 09:22am - 03 Feb 2014 11:15am)

Document Created On

Production Created Details

Table of Contents

- ▼ ALLERGIES, ADVERSE REACTIONS, ALERTS
- ▼ Medications
- ▼ PROBLEMS
- ▼ Results
- ▼ SOCIAL HISTORY
- ▼ VITAL SIGNS
- ▼ IMMUNIZATIONS
- ▼ PLAN OF CARE
- ▼ Procedures

ALLERGIES, ADVERSE REACTIONS, ALERTS

Substance	Reaction	Severity	Status
Codine	Hives	Fatal	Active

Medications

Medication	Instructions	Start Date	Stop Date
Percoxit 5/325mg Oral Tablet (acetaminophen / oxycodone)	1 tablet PO QID	07/10/2013	
Penicillin V Potassium	Penicillin G 250 mg orally every 6 to 8 hours	07/15/2013	

PROBLEMS

Problem	Code	Status	Onset Date	Resolution Date
Tuberculosis of lung	A15.0 (ICD-9 CM)	Active	Mr. Adam Everman November 25, 1954 Male Work Not Hispanic or Latino Primary Home: 17 Davis Rd. Blue Bell, MA 01238, US Tel: (774)955-1232 Fax: (774)955-1232	12345-216-8401.1.113883.19

43

©eHealth Exchange. All rights reserved.