Test Procedure for §170.304 (f) Electronic Copy of Health Information

This document describes the draft test procedure for evaluating conformance of complete EHRs or EHR modules[1] to the certification criteria defined in 45 CFR Part 170 Subpart C of the Final Rule for Health Information Technology: Initial Set of standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology as published in the Federal Register on July 28, 2010. The document[2] is organized by test procedure and derived test requirements with traceability to the normative certification criteria as described in the Overview document located at http://healthcare.nist.gov/docs/TestProcedureOverview_v1.pdf. The test procedures may be updated to reflect on-going feedback received during the certification activities.

The HHS/Office of the National Coordinator for Health Information Technology (ONC) has defined the standards, implementation guides and certification criteria used in this test procedure. Applicability and interpretation of the standards, implementation guides and certification criteria to EHR technology is determined by ONC. Test procedures to evaluate conformance of EHR technology to ONC's requirements are defined by NIST. Testing of EHR technology is carried out by ONC-Authorized Testing and Certification Bodies (ATCBs), not NIST, as set forth in the final rule establishing the Temporary Certification Program (*Establishment of the Temporary Certification Program for Health Information Technology, 45 CFR Part 170; June 24, 2010*.)

Questions about the applicability of the standards, implementation guides or criteria should be directed to ONC at ONC.Certification@hhs.gov. Questions about the test procedures should be directed to NIST at hit-tst-fdbk@nist.gov. Note that NIST will automatically forward to ONC any questions regarding the applicability of the standards, implementation guides or criteria. Questions about functions and activities of the ATCBs should be directed to ONC at ONC.Certification@hhs.gov.

CERTIFICATION CRITERIA

This Certification Criterion is from the Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology Final Rule issued by the Department of Health and Human Services (HHS) on July 28, 2010.

§170.304 (f) Electronic copy of health information. Enable a user to create an electronic copy of a patient's clinical information, including, at a minimum, diagnostic test results, problem list, medication list, and medication allergy list in:

(1) Human readable format; and
(2) On electronic media or through some other electronic means in accordance with:

[1] Department of Health and Human Services, 45 CFR Part 170 Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, Final Rule, July 28, 2010.

[2] Disclaimer: Certain commercial products are identified in this document. Such identification does not imply recommendation or endorsement by the National Institute of Standards and Technology.

(i) The standard (and applicable implementation specifications) specified in §170.205(a)(1) or §170.205(a)(2); and
(ii) For the following data elements the applicable standard must be used:
(A) Problems. The standard specified in §170.207(a)(1) or, at a minimum, the version of the standard specified in §170.207(a)(2);
(B) Laboratory test results. At a minimum, the version of the standard specified in §170.207(c); and
(C) Medications. The standard specified in §170.207(d).

Per Section III.D of the preamble of the Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, Final Rule where the electronic copy of health information certification criterion is discussed:

- Meaningful Use Stage 1 Measure**:** More than 50% of all patients of the EP or the inpatient or emergency departments of the eligible hospital or CAH (POS 21 or 23) who request an electronic copy of their health information are provided it within 3 business days
- "By human readable format, we mean a format that enables a human to read and easily comprehend the information presented to them regardless of the method of presentation (e.g., computer screen, handheld device, electronic document)."
- "We do not specify the method by which an individual must receive an electronic copy of the specified health information, only that Certified EHR Technology be capable of electronically generating an electronic copy in human readable format and in accordance with one of the adopted summary record standards. While Certified EHR Technology must be capable of creating an electronic copy of a patient's health information as specified in this certification criterion, we encourage Complete EHR and EHR Module developers to also include the capability to generate an electronic copy in a manner that allows eligible professionals (and eligible hospitals as this capability relates to Complete EHRs and EHR Modules designed for an inpatient setting) to comply with applicable provisions of the HIPAA Privacy and Security Rules."
- "…in order to meet this certification criterion, Certified EHR Technology must be able to generate an electronic copy that is in human readable format and as a CCD or CCR. If Certified EHR Technology is capable of generating one copy that could meet both of these requirements, we would consider that to be a compliant implementation of this capability."

INFORMATIVE TEST DESCRIPTION

This section provides an informative description of how the test procedure is organized and conducted. It is not intended to provide normative statements of the certification requirements.

This test evaluates the capability for a Complete EHR or EHR Module to create an electronic copy of a patient's clinical information, including, at a minimum, diagnostic test results, problem list, medication list, and medication allergy list in the formats and vocabularies specified by the referenced standards. Per the FR criteria, the test procedure does not evaluate the capability to create an electronic copy that includes other types of patient information.

The test procedure consists of one section:

- Create - evaluates the capability to create a copy of a patient's clinical information either on electronic media or some other electronic means and in HL7 CCD format or ASTM CCR format; the patient's clinical information includes diagnostic test results, problems, medications, and medication allergies in human-readable form and using vocabulary coded values
  - The Tester enters the NIST-supplied test data for diagnostic test results, problems, medications, and medication allergies into a patient's EHR
  - The Tester uses the Vendor-identified function(s) to create a copy of this patient clinical information on electronic media or via another electronic means formatted in HL7 CCD or ASTM CCR
  - The Tester validates that the data rendered on the electronic media or via other electronic means are complete and in conformance

REFERENCED STANDARDS

§170.205 Content exchange standards and implementation specifications for exchanging electronic health information.	Regulatory Referenced Standard
The Secretary adopts the following content exchange standards and associated implementation specifications:	
(a) Patient Summary Record.	
(1) Standard. Health Level Seven Clinical Document Architecture (CDA) Release 2, Continuity of Care Document (CCD) (incorporated by reference in §170.299). Implementation specifications. The Healthcare Information Technology Standards Panel (HITSP) Summary Documents Using HL7 CCD Component HITSP/C32 (incorporated by reference in §170.299).	
(2)) Standard. ASTM E2369 Standard Specification for Continuity of Care Record and Adjunct to ASTM E2369 (incorporated by reference in §170.299).	

§170.207 Vocabulary standards for representing electronic health information.	Regulatory Referenced Standard
The Secretary adopts the following code sets, terminology, and nomenclature as the vocabulary standards for the purpose of representing electronic health information:	
(a) Problems.	

§170.207 Vocabulary standards for representing electronic health information.	Regulatory Referenced Standard
(1) Standard. The code set specified at 45 CFR 162.1002(a)(1) for the indicated conditions.	45 CFR 162.1002(a)(1). (1) *International Classification of Diseases, 9th Edition, Clinical Modification, (ICD–9–CM), Volumes 1 and 2* (including The Official ICD–9–CM Guidelines for Coding and Reporting), as maintained and distributed by HHS, for the following conditions: (i) Diseases. (ii) Injuries. (iii) Impairments. (iv) Other health problems and their manifestations. (v) Causes of injury, disease, impairment, or other health problems.
(2) Standard. International Health Terminology Standards Development Organization (IHTSDO) Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT®) July 2009 version (incorporated by reference in §170.299).	
(c) Laboratory test results. Standard. Logical Observation Identifiers Names and Codes (LOINC®) version 2.27, when such codes were received within an electronic transaction from a laboratory (incorporated by reference in §170.299).	
(d) Medications. Standard. Any source vocabulary that is included in RxNorm, a standardized nomenclature for clinical drugs produced by the United States National Library of Medicine.	As of 6/10/2010 the following source vocabularies are listed by NLM: GS Gold Standard Alchemy MDDB Medi-Span Master Drug Data Base MMSL Multum MediSource Lexicon MMX Micromedex DRUGDEX MSH Medical Subject Headings (MeSH) MTHFDA FDA National Drug Code Directory MTHSPL FDA Structured Product Labels NDDF First DataBank NDDF Plus Source Vocabulary NDFRT Veterans Health Administration National Drug File - Reference Terminology SNOMED CT SNOMED Clinical Terms (drug information) VANDF Veterans Health Administration National Drug File

NORMATIVE TEST PROCEDURES

Derived Test Requirements

DTR170.304.f - 1: Create an electronic copy of a patient's clinical information

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Required Vendor Information

VE170.304.f – 1.01: Vendor shall identify a patient with an existing record in the EHR to be used for this test

VE170.304.f. – 1.02: Vendor shall identify the EHR function(s) that are available to 1) select the patient, 2) enter patient clinical information including diagnostic test results, problems, medications, and medication allergies,, 3) create a copy of a patient's clinical information on electronic media or other electronic means in HL7 CCD format or ASTM CCR format including diagnostic test results, problem list, medication list, and medication allergy list

Required Test Procedure

TE170.304.f. – 1.01: Tester shall select patient clinical information data from NIST-supplied test data sets in TD170.304.f.1

TE170.304.f. – 1.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and enter patient clinical information, including

- Diagnostic test results
- Problems
- Medications
- Medication allergies

TE170.304.f. – 1.03: Using the EHR function(s) identified by the Vendor, the Tester shall create a copy of the patient's clinical information on electronic media or other electronic means in the Vendor-selected HL7 CCD format or ASTM CCR format, including

- Diagnostic test results
- Problem list
- Medication list
- Medication allergy list

TE170.304.f. – 1.04: Using the NIST-supplied Inspection Test Guide, the Tester shall verify that the copy of the patient's clinical information has been created correctly and without omission

Inspection Test Guide

IN170.304.f. – 1.01: Tester shall verify that all of the patient clinical information data are entered correctly and without omission

IN170.304.f. – 1.02: Using the data in the NIST-supplied Test Data TD170.304.f.1, Tester shall verify that all of the patient clinical information data are stored in the patient's record, including

- Diagnostic test results
- Problems
- Medications
- Medication allergies

IN170.304.f. – 1.03: Using the NIST-supplied conformance testing tool identified in the Conformance Test Tools section of this test procedure, Tester shall verify that the copy of the patient's clinical information has been created in HL7 CCD format ASTM CCR format, in human readable form and using vocabulary coded values correctly and without omission

TEST DATA

Test data is provided by NIST in this Test Procedure to ensure that the functional and interoperable requirements identified in the criteria can be adequately evaluated for conformance, as well as to provide consistency in the testing process across multiple ONC-Authorized Testing and Certification Bodies (ATCBs). The NIST-supplied test data focus on evaluating the basic capabilities required of EHR technology, rather than exercising the full breadth/depth of capability that installed EHR technology might be expected to support. The test data is formatted for readability of use within the testing process. The format is not prescribing a particular end-user view or rendering. No additional requirements should be drawn from the format.

The Tester shall use and apply the NIST-supplied test data during the test, without exception, unless one of the following conditions exist:

- The Tester determines that the Vendor product is sufficiently specialized that the NIST-supplied test data needs to be modified in order to conduct an adequate test. Having made the determination that some modification to the NIST-supplied test data is necessary, the Tester shall record the modifications made as part of the test documentation.
- The Tester determines that changes to the test data will improve the efficiency of the testing process; primarily through using consistent demographic data throughout the testing workflow. The tester shall ensure that the functional and interoperable requirements identified in the criterion can be adequately evaluated for conformance and that the test data provides a comparable level of robustness.

Any departure from the NIST-supplied test data shall strictly focus on meeting the basic capabilities required of EHR technology relative to the certification criterion rather than exercising the full breadth/depth of capability that installed EHR technology might be expected to support.

The Test Procedures require that the Tester enter the test data into the EHR technology being evaluated for conformance. The intent is that the Tester fully control the process of entering the test data in order to ensure that the data are correctly entered as specified in the test procedure. If a situation arises where it is impractical for a Tester to directly enter the test data, the Tester, at the Tester's discretion, may instruct the Vendor to enter the test data, so long as the Tester remains in full control of the testing process, directly observes the test data being entered by the Vendor, and validates that the test data are entered correctly as specified in the test procedure.

The format of the test data below is for readability purposes in this Test Procedure only. It does not represent an implementation of the 'display in human readable format' requirement of this Test Procedure. It is not intended to represent 'human readable' per the Final Rule definition. The format used below does not place any requirements on an EHR module or system. There are no additional requirements for the meaning of 'human readable' beyond those articulated in the definition of 'human readable' referenced above.

TD170.304.f.: Electronic copy of patient's health information

* indicates alternative standard code per certification criteria

E-copy of Health Information Test Data – Set #1

Patient

Name	Date/Time of Birth	Gender	Identification Number	Identification Number Type	Address/Phone
Jeffrey Surrett	09/24/1960 13:15:02	Male	999869999	Medical Record Number	347 Grove Street Williamsport, Pennsylvania 17701 570-837-9933

"Source" for all data for this patient: George Gonzales, MD

Problem List

Type	ICD-9 Code	Patient Problem	Status	Date Diagnosed
Diagnosis	250.02	Diabetes Mellitus, Type 2	Active	09/16/2009
Condition	272.4	Hyperlipidemia	Active	05/05/2002
Finding	414.01	Coronary Artery Disease (CAD)	Chronic	05/05/2002
Symptom	401.9	Hypertension, Essential	Active	05/05/2002

Type	SNOMED Code*	Patient Problem	Status	Date Diagnosed
Disorder	44054006	Diabetes Mellitus, Type 2	Active	09/16/2009
Disorder	55822004	Hyperlipidemia	Active	05/05/2002
Disorder	53741008	Coronary Arteriosclerosis	Chronic	05/05/2002
Disorder	59621000	Essential Hypertension	Active	05/05/2002

Medication List

RxNorm Code	Product	Generic Name	Brand Name	Strength	Dose	Route	Frequency	Date Started	Status
205875	Medication	glyburide	Diabeta	2.5 mg	1 Tablet	PO	Q AM	09/16/2009	Active
617314	Medication	atorvastatin	Lipitor	10 mg	1 Tablet	PO	Q Day	05/05/2002	Active

RxNorm Code	Product	Generic Name	Brand Name	Strength	Dose	Route	Frequency	Date Started	Status
		calcium							
200801	Medication	furosemide	Lasix	20 mg	1 Tablet	PO	BID	05/05/2002	Active
628958	Medication	potassium chloride	Klor-Con	10 mEq	1 Tablet	PO	BID	05/05/2002	Active

Medication Allergy List

Type	SNOMED Code	Medication/Agent	Reaction	Date Recorded
Drug Allergy	293597001	Codeine	Hives	06/27/1996
Drug Allergy	294506009	Ampicillin	Diarrhea, nausea, vomiting	03/15/1994

Diagnostic Test Results

Type	LOINC Code	Test (Normal Range)	Result	Date Performed
Chemistry	14771-0	Fasting Blood Glucose (70–100 mg/dl)	178 mg/dl	09/16/2009
Chemistry	14682-9	Creatinine (0.5–1.4 mg/dl)	1.0 mg/dl	09/16/2009
Chemistry	14937-7	BUN (7–30 mg/dl)	18 mg/dl	09/16/2009
Chemistry	2951-2	Sodium (135–146 mg/dl)	141 mg/dl	09/16/2009
Chemistry	2823-3	Potassium (3.5–5.3 mg/dl)	4.3 mg/dl	09/16/2009
Chemistry	14647-2	Total cholesterol (<200 mg/dl)	162 mg/dl	09/16/2009
Chemistry	14646-4	HDL cholesterol (≥40 mg/dl)	43 mg/dl	09/16/2009
Chemistry	2089-1	LDL cholesterol (<100 mg/dl)	84 mg/dl	09/16/2009
Chemistry	14927-8	Triglycerides (<150 mg/dl)	177 mg/dl	09/16/2009
Imaging	24648-8	Chest X-ray, PA	No disease is seen in the lung fields or pleura	09/16/2009

E-copy of Health Information Test Data – Set #2

Patient

Name	Date/Time of Birth	Gender	Identification Number	Identification Number Type	Address/Phone
Joseph Rollo	12/28/1984 14:25:10	Male	9813450798	Medical Record Number	867 Juniper Street Morton, Illinois 61550 309-377-8488

"Source" for all data for this patient: Curtis James, MD

Problem List

Type	ICD-9 Code	Patient Problem	Status	Date Diagnosed
Diagnosis	493.00	Asthma, unspecified	Active	12/22/2009
Diagnosis	250.02	Diabetes Mellitus, Type 2	Active	08/10/2008

Type	SNOMED Code*	Patient Problem	Status	Date Diagnosed
Disorder	195967001	Asthma	Active	12/22/2009
Disorder	44054006	Diabetes Mellitus, Type 2	Active	08/10/2008

Medication List

RxNorm Code	Product	Generic Name	Brand Name	Strength	Dose	Route	Frequency	Date Started	Status
206833	Medication	metaproterenol sulfate	Alupent Inhalation Aerosol	15 mg/ml	2 Puffs	Inhaled	Q4h	12/22/2009	Active
205875	Medication	glyburide	Diabeta	2.5 mg	1 Tablet	PO	Q AM	08/10/2008	Active

Medication Allergy List

Type	SNOMED Code	Medication/Agent	Reaction	Date Recorded
Drug Allergy	91936005	Penicillin	Rash and anaphylaxis	08/10/2008
Drug Allergy	293620004	Indomethacin	Nausea, vomiting, rash, dizziness, headache	03/25/2003

Diagnostic Test Results

Type	LOINC Code	Test (Normal Range)	Result	Date Performed
Imaging	24648-8	Chest X-ray, PA	Increased bronchial wall markings, patchy infiltrates	02/16/2010
Chemistry	14771-0	Fasting Blood Glucose (70–100 mg/dl)	70 mg/dl	12/22/2009
Hematology	26449-9	Eosinophil Count (1 – 3 %)	2%	12/22/2009
Imaging	24648-8	Chest X-ray, PA	Bronchial wall markings	12/22/2009

E-copy of Health Information Test Data – Set #3

Patient

Name	Date/Time of Birth	Gender	Identification Number	Identification Number Type	Address/Phone
Joyce Tyler	11/12/1955 10:30:15	Female	9639263266	Medical Record Number	563 3rd Street Fargo, North Dakota 58102 701-366-4958

"Source" for all data for this patient: Julia Andrews, MD

Problem List

Type	ICD-9 Code	Patient Problem	Status	Date Diagnosed
Diagnosis	486	Pneumonia	Resolved	01/22/2010
Diagnosis	496.0	Chronic Obstructive Pulmonary Disease	Chronic	10/10/1999

Type	SNOMED Code*	Patient Problem	Status	Date Diagnosed
Disorder	233604007	Pneumonia	Resolved	01/22/2010
Disorder	13645005	Chronic Obstructive Lung Disease	Chronic	10/10/1999

Medication List

RxNorm Code	Product	Generic Name	Brand Name	Strength	Dose	Route	Frequency	Date Started	Status
308460	Medication	azithromycin	Azithromycin	250 mg	1 Tablet	PO	QD	01/22/2010	No Longer Active

RxNorm Code	Product	Generic Name	Brand Name	Strength	Dose	Route	Frequency	Date Started	Status
836370	Medication	ipratropium bromide monhydrate	Atrovent Inhaler	18 mcg/puff	2 Puffs	Inhaled	QID	10/10/1999	Active
630208	Medication	albuterol sulfate	Albuterol Inhaler	2.5 mg/3ml	2 Puffs	Inhaled	Q 4 PRN	10/10/1999	Active

Medication Allergy List

Type	SNOMED Code	Medication/Agent	Reaction	Date Recorded
Drug Allergy	91936005	Penicillin	Rash and anaphylaxis	06/10/2009
Drug Allergy	91939003	Sulfonamides	Hives, photosensitivity	04/25/1988

Diagnostic Test Results

Type	LOINC Code	Test (Normal Range)	Result	Date Performed
Imaging	42272-5	Chest X-ray, PA & Lateral	Hyperinflated lungs with flattened diaphragm and central pulmonary artery enlargement	02/15/2010
Hematology	718-7	Hemoglobin (male: 14-18 g/dl female: 12-16 g/dl)	16 g/dl	12/22/2009
Hematology	4544-3	Hematocrit (male: 40-54% female: 36-48%)	45%	12/22/2009
Cardiology	34534-8	Electrocardiogram	Normal Sinus Rhythm	12/22/2009

E-copy of Health Information Test Data – Set #4

Patient

Name	Date/Time of Birth	Gender	Identification Number	Identification Number Type	Address/Phone
Sarah Ebbert	10/08/1962 20:25:59	Female	998822799	Medical Record Number	856 Salt Street, Shawville, Pennsylvania 16873 814-645-6489

"Source" for all data for this patient: Maria Valdez, MD

Problem List

Type	ICD-9 Code	Patient Problem	Status	Date Diagnosed
Condition	272.4	Hyperlipidemia	Active	07/05/2006
Symptom	401.9	Hypertension, Essential	Active	07/05/2006

Type	SNOMED Code*	Patient Problem	Status	Date Diagnosed
Disorder	55822004	Hyperlipidemia	Active	07/05/2006
Disorder	59621000	Essential Hypertension	Active	07/05/2006

Medication List

RxNorm Code	Product	Generic Name	Brand Name	Strength	Dose	Route	Frequency	Date Started	Status
617314	Medication	atorvastatin calcium	Lipitor	10 mg	1 Tablet	PO	Q Day	07/05/2006	Active
200801	Medication	furosemide	Lasix	20 mg	1 Tablet	PO	BID	07/05/2006	Active
628958	Medication	(potassium chloride	Klor-Con	10 mEq	1 Tablet	PO	BID	07/05/2006	Active

Medication Allergy List

Type	SNOMED Code	Medication/Agent	Reaction	Date Recorded
Drug Allergy	91936005	Penicillin	Rash and anaphylaxis	05/22/1998
Drug Allergy	293597001	Codeine	Hives	02/17/1992

Diagnostic Test Results

Type	LOINC Code	Test (Normal Range)	Result	Date Performed
Chemistry	2823-3	Potassium (3.5–5.3 mg/dl)	4.5 mg/dl	07/15/2009
Chemistry	14647-2	Total cholesterol (<200 mg/dl)	180 mg/dl	07/15/2009
Chemistry	14646-4	HDL cholesterol (≥40 mg/dl)	38 mg/dl	07/15/2009
Chemistry	2089-1	LDL cholesterol (<100 mg/dl)	120 mg/dl	07/15/2009
Chemistry	14927-8	Triglycerides (<150 mg/dl)	187 mg/dl	07/15/2009
Imaging	42272-5	Chest X-ray, PA & Lateral	The heart outline is normal and the hilar and mediastinal vessels are of normal appearance	07/15/2009

E-copy of Health Information Test Data – Set #5

Patient

Name	Date/Time of Birth	Gender	Identification Number	Identification Number Type	Address/Phone
Michael Charles	02/21/1965 15:30:25	Male	987730987	Medical Record Number	689 Dun Street Aurora, Colorado 80011 303-544-9988

"Source" for all data for this patient: Paul Newsome, MD

Problem List

Type	ICD-9 Code	Patient Problem	Status	Date Diagnosed
Diagnosis	250.02	Diabetes Mellitus, Type 2	Active	07/17/2009
Symptom	401.9	Hypertension, Essential	Active	06/05/2008

Type	SNOMED Code*	Patient Problem	Status	Date Diagnosed
Disorder	44054006	Diabetes Mellitus, Type 2	Active	07/17/2009
Disorder	59621000	Essential Hypertension	Active	06/05/2008

Medication List

RxNorm Code	Product	Generic Name	Brand Name	Strength	Dose	Route	Frequency	Date Started	Status
205875	Medication	glyburide	Diabeta	2.5 mg	1 Tablet	PO	Q AM	07/17/2009	Active
200801	Medication	furosemide	Lasix	20 mg	1 Tablet	PO	BID	06/05/2008	Active
628958	Medication	potassium chloride	Klor-Con	10 mEq	1 Tablet	PO	BID	06/05/2008	Active

Medication Allergy List

Type	SNOMED Code	Medication/Agent	Reaction	Date Recorded
Drug Allergy	294506009	Ampicillin	Diarrhea, nausea, vomiting	03/25/1997
Drug Allergy	91939003	Sulfonamides	Hives, photosensitivity	04/25/1989

Diagnostic Test Results

Type	LOINC Code	Test (Normal Range)	Result	Date Performed
Chemistry	14771-0	Fasting Blood Glucose (70–100 mg/dl)	145 mg/dl	07/17/2009
hemistry	2823-3	Potassium (3.5–5.3 mg/dl)	4.5 mg/dl	07/17/2009
Chemistry	14927-8	Triglycerides (<150 mg/dl)	187 mg/dl	07/17/2009
Imaging	42272-5	Chest X-ray, PA & Lateral	The heart outline is normal and the hilar and mediastinal vessels are of normal appearance	07/17/2009

CONFORMANCE TEST TOOLS

The following testing tools are available to evaluate conformance to the standards referenced in this test procedure:

- HL7 CCD/HITSP C32 – NIST provides an HL7 CCD/HITSP C32 validation tool designed specifically to support this test procedure. The tool is available in two forms:
    - a downloadable package for local installation available at http://xreg2.nist.gov/cda-validation/mu.html
    - a web-accessable validator which is hosted by NIST available at http://xreg2.nist.gov/cda-validation/mu.html

Support for these tools is available by contacting

Andrew McCaffrey (andrew.mccaffrey@nist.gov)
Computer Scientist
National Institute of Standards and Technology (NIST)
Information Technology Laboratory

- ASTM CCR – Open Health Data provides an ASTM CCR validation tool designed specifically to support this test procedure. The tool is available through the following:
    - Files can be retrieved from the SourceForge site: http://sourceforge.net/projects/ccrvalidator
    - Direct link to the file: http://sourceforge.net/projects/ccrvalidator/files/ValidationService/1.0/ValidationService-1.0.war/download
    - Source code location: http://ccrvalidator.svn.sourceforge.net/viewvc/ccrvalidator/branches/

- HL7 CCD style sheet – HL7 provides a style sheet to render HL7 CCD structured documents as part of the CCD specifications package. Contact HL7 directly for the specification package.

The following information is provided to assist the Tester in interpreting the conformance reports generated by the NIST conformance testing tools.
The HL7 CCD/HITSP C32 and ASTM CCR validation tools evaluate individual conformance statements which have been derived from the standards and implementation guides identified in the Final Rule and the test data provided in this test procedure. The validation tools evaluate the submitted CCD/CCR instance for each conformance statement, and then produce a conformance report. The Tester should consider that a report containing only Affirmative and Warning messages indicates general conformance to the standard and test data expectations. If reported, Errors should be considered as significant departures from the standard or test data requirements which need to be corrected in order to claim conformance. ATCBs will need to further analyze each error to determine if, in the context of meeting the criterion and overall meaningful use objective, the error results in a failure of the Test Procedure by the EHR technology. The tester may need to inspection test data values derived from required vocabularies and code sets.

Document History

Version Number	Description of Change	Date Published
0.5	Original draft version	April 9, 2010
1.0	Updated to reflect Final Rule	July 21, 2010
1.0	Updates include: • removed “Pending” in header • updated zip codes in test data	August 13, 2010