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# **CMS QRDA Submission Errors Eligible Hospitals / Critical Access Hospitals**

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Rick Geimer

Lantana Consulting Group

# Presenter Biography

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## Rick Geimer

- Chief Technology Officer, Lantana Consulting Group
- Co-chair, HL7 Structured Document Working Group
- HL7 CDA R2 Certified Specialist
- Co-editor of Consolidated CDA and other specifications



# Agenda

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- Common CMS QRDA Submission Errors
- Pre-Submission QRDA Debugging Approaches

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# Common CMS QRDA Submission Errors

# Errors Discussed in this Presentation

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This presentation addresses errors in the following categories:

- QRDA Document Format
- CCN Validation
- Admission and Discharge Time
- Patient Ethnic Group Code
- Patient ID
- Legal Authenticator
- Section Text

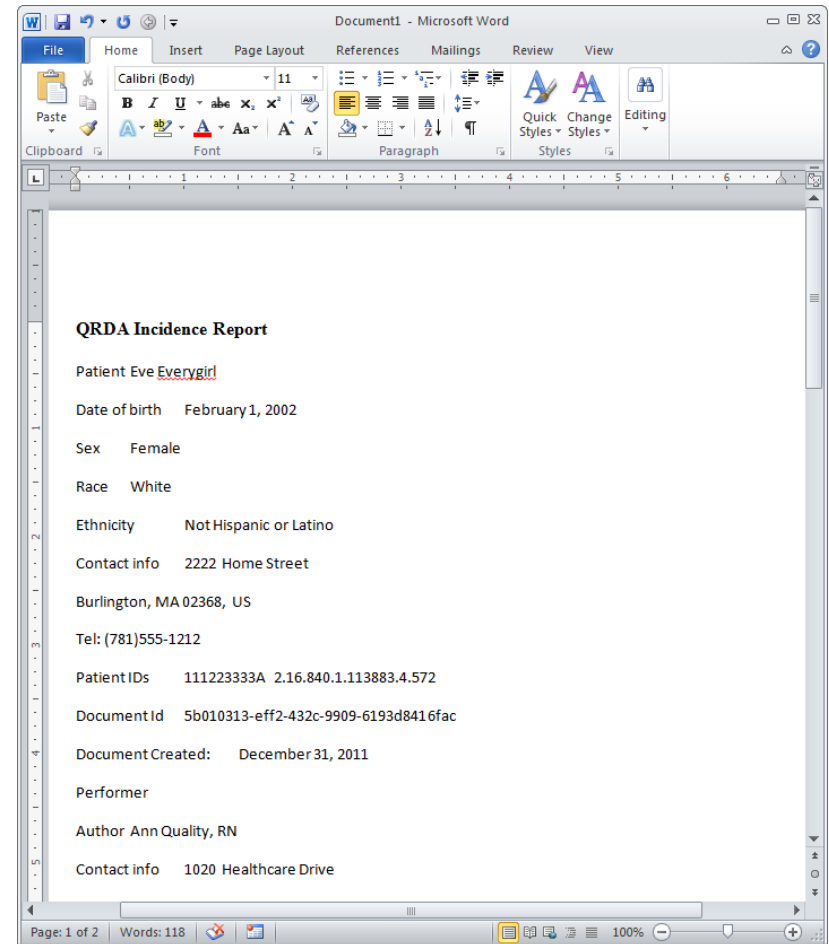
# QRDA Document Format Error

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- Error Message
  - The document does not conform to QRDA document formats accepted by CMS.
- Error Meaning
  - The submitted document is either not an XML file, or is an XML file but does not conform to the QRDA XML Schema provided by HL7.

# QRDA Document Format Example

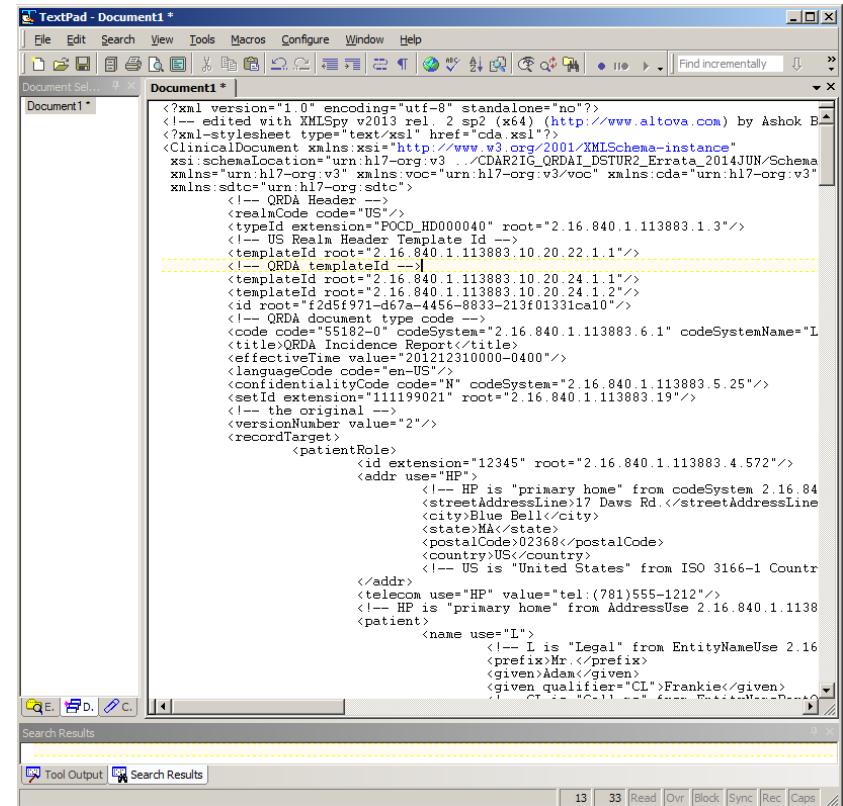
It is not legal to submit an MS Word document, HMTL, PDF, or a QRDA that does not comply with the CDA\_SDTC.xsd schema.



# QRDA Document Format Correction

Submit a valid QRDA XML file.

The last portion of this presentation describes how to validate against the QRDA schemas before submission.



```
<?xml version="1.0" encoding="utf-8" standalone="no"?>
<!-- edited with XMLSpy v2013 rel. 2 sp2 (x64) (http://www.altova.com) by Ashok B -->
<?xml-stylesheet type="text/xsl" href="cda.xsl"?>
<ClinicalDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="urn:hl7-org:v3 /CDAR2IG_QRDA1_DSTUR2_Errata_2014JUN/Schema
xmlns="urn:hl7-org:v3" xmlns:voc="urn:hl7-org:v3/voc" xmlns:cda="urn:hl7-org:v3"
xmlns:sdtc="urn:hl7-org:sdtc">
  <!-- QRDA Header -->
  <resId code="US"/>
  <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3"/>
  <!-- US Realm Header Template Id -->
  <templateId root="2.16.840.1.113883.10.20.22.1.1"/>
  <!-- QRDA templateId -->
  <templateId root="2.16.840.1.113883.10.20.24.1.1"/>
  <templateId root="2.16.840.1.113883.10.20.24.1.2"/>
  <id root="f2d5f971-d67a-4456-8833-213f01331ca10"/>
  <!-- QRDA document type code -->
  <code code="55182-0" codeSystem="2.16.840.1.113883.6.1" codeSystemName="L
  <title>QRDA Incidence Report</title>
  <effectiveTime value="201212310000-0400"/>
  <languageCode code="en-US"/>
  <confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25"/>
  <!-- the original -->
  <setId extension="111199021" root="2.16.840.1.113883.19"/>
  <versionNumber value="2"/>
  <recordTarget>
    <patientRole>
      <id extension="12345" root="2.16.840.1.113883.4.572"/>
      <addr use="HP">
        <!-- HP is "primary home" from codeSystem 2.16.84
        <streetAddressLine>17 Daws Rd.</streetAddressLine>
        <city>Blue Bell</city>
        <state>PA</state>
        <postalCode>02368</postalCode>
        <country>US</country>
        <!-- US is "United States" from ISO 3166-1 Countr
      </addr>
      <telecom use="HP" value="tel:(781)555-1212"/>
      <!-- HP is "primary home" from AddressUse 2.16.840.1.1138
      <patient>
        <name use="L">
          <!-- I is "Legal" from EntityNameUse 2.16
          <prefix>Mr.</prefix>
          <given>Adam</given>
          <given qualifier="CL">Frankie</given>
          <!-- I is "Legal" from EntityNameUse 2.16
        </name>
      </patient>
    </patientRole>
  </recordTarget>
</ClinicalDocument>
```

# CCN Validation Errors

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- Error Messages

- CCN (NULL) cannot be validated.
- This representedCustodianOrganization SHALL contain exactly one [1..1] id (CONF-HR: 16595-1) such that it SHALL contain exactly one [1..1] @root="2.16.840.1.113883.4.336" Facility CMS Certification Number (CONF-HR:16596-1).
- This @extension SHALL contain exactly one [1..1] Facility CMS Certification Number (CONF-HR:16597-1).
- ... etc.

- Error Meaning

- The document must contain a valid CMS Certification Number (CCN) as an ID in the representedCustodianOrganization element of the QRDA header.

# CCN Error Examples

The examples to the right show several invalid CCNs:

- CCN is missing entirely.

```
<custodian>
  <assignedCustodian>
    <representedCustodianOrganization>
      ...
    </representedCustodianOrganization>
  </assignedCustodian>
</ custodian>
```

- The id has the CCN root, but is missing the extension with the organization's actual CCN.

```
<custodian>
  <assignedCustodian>
    <representedCustodianOrganization>
      <!--Submitters' CCN -->
      <id root="2.16.840.1.113883.4.336"/>
      ...
    </representedCustodianOrganization>
  </assignedCustodian>
</ custodian>
```

- An invalid CCN e.g., "ABC123" was sent instead of the organization's actual CCN.

```
<custodian>
  <assignedCustodian>
    <representedCustodianOrganization>
      <!--Submitters' CCN -->
      <id root="2.16.840.1.113883.4.336" extension="ABC123"/>
      ...
    </representedCustodianOrganization>
  </assignedCustodian>
</ custodian>
```

# CCN Error Correction

The examples to the right show corrected CCNs:

- The id has the CCN root and the extension with the organization's CCN.
- **Note:** “*YOUR-CCN*” is a placeholder that needs to be replaced with your actual CCN. If you send the literal string “YOUR-CCN,” it will fail.
- **Note:** The @extension attribute is the correct place for the CCN (and also TIN or NPI in their respective elements) even though this is not clearly explicit in the QRDA base IG.

```
<custodian>
  <assignedCustodian>
    <representedCustodianOrganization>
      <!--Submitters' CCN -->
      <id root="2.16.840.1.113883.4.336" extension="YOUR-CCN"/>
      ...
    </representedCustodianOrganization>
  </assignedCustodian>
</custodian>
```

# Test Submission

- Vendor can submit a test submission using a dummy CCN equal to 800890 instead of organization's CCN, but only for TEST submission.

```
<custodian>
  <assignedCustodian>
    <representedCustodianOrganization>
      <!--Submitters' CCN -->
      <id root="2.16.840.1.113883.4.336" extension="800890"/>
      ...
    </representedCustodianOrganization>
  </assignedCustodian>
</custodian>
```



- Note: Vendor may use the dummy CCN if they are not yet authorized to submit data for any hospitals.

# Admission and Discharge Time Errors

- Error Messages

- This patient SHALL contain discharge time reported in the Encounter Performed section, precise to the seconds (CONF-HR:10129-1).\*
- This patient SHALL contain admission time reported in the Encounter Performed section, precise to the seconds (CONF-HR:10129-2).

- Error Meaning

- For admission and discharge, times must be present and in the form YYYYMMDDhhmmss+ZZZZ, where +ZZZZ is the UTC offset and can be either positive or negative (i.e. can be +0500, -0700, etc.). The UTC offset should be provided for any timestamps that are more precise than the day (i.e., precise to the hour or second)
- The admission time must be earlier than the discharge time.

\* QRDA Implementation Guide conformance messages with HR included (e.g., CONF-HR:10129-1), indicate that the associated base HL7 QRDA IG constraints (CONF:10129) have been modified in accordance with CMS system requirements for HQR-HITECH.

# Admission and Discharge Time Examples

The example to the right shows two invalid encounter times.

- Admission time is missing the value attribute entirely.
- Discharge time is present, but is precise only to the day.

```
<encounter classCode="ENC" moodCode="EVN">
  <!-- Encounter activities template -->
  <templateId root="2.16.840.1.113883.10.20.22.4.49"/>
  <!-- Encounter performed template -->
  <templateId root="2.16.840.1.113883.10.20.24.3.23"/>
  ...
  <!-- Length of Stay -->
  <effectiveTime>
    <!-- Attribute: admission datetime -->
    <low/>
    <!-- Attribute: discharge datetime -->
    <high value="20140227"/>
  </effectiveTime>
</encounter>
```



# Admission and Discharge Time Partial Correction

The example to the right is still incorrect.

- Admission and discharge now both have valid value attributes, but admission is after the discharge time.

```
<encounter classCode="ENC" moodCode="EVN">
  <!-- Encounter activities template -->
  <templateId root="2.16.840.1.113883.10.20.22.4.49"/>
  <!-- Encounter performed template -->
  <templateId root="2.16.840.1.113883.10.20.24.3.23"/>
  ...
  <!-- Length of Stay -->
  <effectiveTime>
    <!-- Attribute: admission datetime -->
    <low value="20140228090000+0500"/>
    <!-- Attribute: discharge datetime -->
    <high value="20140227103000+0500"/>
  </effectiveTime>
</encounter>
```

# Admission and Discharge Time Correction

The example to the right shows two corrected encounter times.

- Admission time now has a value attribute.
- Discharge time is now precise to the second.

Note: Whenever a date time is more precise than the day, a UTC offset should be present (+0500 in the examples). It is advisable to include a UTC offset whenever possible.

```
<encounter classCode="ENC" moodCode="EVN">
  <!-- Encounter activities template -->
  <templateId root="2.16.840.1.113883.10.20.22.4.49"/>
  <!-- Encounter performed template -->
  <templateId root="2.16.840.1.113883.10.20.24.3.23"/>
  ...
  <!-- Length of Stay -->
  <effectiveTime>
    <!-- Attribute: admission datetime -->
    <low value="20140225090000+0500"/>
    <!-- Attribute: discharge datetime -->
    <high value="20140227103000+0500"/>
  </effectiveTime>
</encounter>
```

Note: UTC offset is not required for validation.

E.g. the following format is valid:

```
<!-- Attribute: admission datetime -->
  <low value="20140225090000"/>
  <!-- Attribute: discharge datetime -->
  <high value="20140227103000"/>
```

# Patient Ethnic Group Code Errors

---

- Error Messages

- This patient SHALL contain exactly one [1..1] ethnicGroupCode (CONF-HR:5323-2).

- Error Meaning

- Patients must have an ethnic group specified.
- It should be set to a value from the Ethnicity value set, but it can be set to null using the proper syntax.
- Legal codes are:
  - 2135-2: Hispanic or Latino
  - 2186-5: Not Hispanic or Latino
  - <https://phinvads.cdc.gov/vads/ViewValueSet.action?id=35D34BBC-617F-DD11-B38D-00188B398520>

# Ethnic Group Code Examples

The example to the right shows two invalid ethnic group codes.

- The ethnicGroupCode element is missing entirely.
- The ethnicGroupCode element is present but empty.

```
<patient>
...
<raceCode code="2106-3"
codeSystem="2.16.840.1.113883.6.238"
codeSystemName="Race & Ethnicity - CDC"
displayName="White"/>
<guardian>...</guardian>
...
</patient>
```

```
<patient>
...
<ethnicGroupCode/>
<guardian>...</guardian>
...
</patient>
```

# Ethnic Group Code Correction

The example to the right shows two valid ethnic group codes.

- The ethnicGroupCode element is fully specified.
- The ethnicGroupCode element is present but properly nulled.

```
<patient>  
...  
<ethnicGroupCode code="2186-5"  
  codeSystem="2.16.840.1.113883.6.238"  
  codeSystemName="Race & Ethnicity - CDC"  
  displayName="Not Hispanic or Latino"/>  
...  
</patient>
```

```
<patient>  
...  
<ethnicGroupCode nullFlavor="NI"/>  
...  
</patient>
```

# Patient ID Errors

---

## Error Message

- This patientRole SHALL contain exactly one [1..1] id (CONF-HR:16857-1).

## Error Meaning

- The patient ID was not specified at all, or was not specified in the correct location. Also, the patient ID should contain a Medicare HIC number indicator if Medicare is the payer.

# Patient ID Examples

The example to the right shows two patient ID errors.

- The id element is missing entirely under patientRole.
- The id element is present in a valid QRDA location, but the CMS guide requires the Health Insurance Claim (HIC) number or patient ID to be under patientRole, not patient.

```
<recordTarget>
  <patientRole>
    <addr use="HP">...</addr>
    ...
    <patient>
      <id extension="12345"
        root="2.16.840.1.113883.4.572"/>
      <name use="L">...</name>
      ...
    </patient>
    ...
  </patientRole>
</recordTarget>
```

Note: HL7 V3 standards like QRDA use a common hierarchy of Participation/ Role/Entity to represent persons, locations, etc. in the quality report. In the example above, <recordTarget> is a participation, <patientRole> is a role, and <patient> is an entity. The HIC number is not a personal ID like a driver's license, but rather one that applies to that person's role as a patient.

# Patient ID Correction

The example to the right shows a corrected patient ID.

- The id element is present and in the correct location for a MEDICARE HIC number indicator.

```
<recordTarget>
  <patientRole>
    <id extension="12345"
      root="2.16.840.1.113883.4.572"/>
    <addr use="HP">...</addr>
    ...
    <patient>
      <name use="L">...</name>
      ...
    </patient>
    ...
  </patientRole>
</recordTarget>
```

# Patient ID Correction for non HIC Patient ID

The example to the right shows a proper correction when the patient ID is not a HIC number.

- The id element is present and in the correct location for a non-HIC patient ID.
- The root attribute must contain the associated OID, and the extension must contain the patient ID.

```
<recordTarget>
  <patientRole>
    <id extension="022354"
      root="2.16.840.1.113883.123.123.1"/>
    <addr use="HP">...</addr>
    ...
  <patient>
    <name use="L">...</name>
    ...
  </patient>
  ...
</patientRole>
</recordTarget>
```



Note: The root attribute OID is required in QRDA. You can look up the OIDs for many common ID types, such as SSN or state driver's license numbers, at the HL7 OID registry: <http://www.hl7.org/oid>.

# Legal Authenticator Errors

---

## Error Message

- SHALL contain exactly one [1..1] legalAuthenticator (CONF:13817).

## Error Meaning

- QRDA documents are clinical documents and need to be signed just like any other legal document.
- Even when such documents are automatically created by a system, they still need someone in a position of authority to attest to their content. (This can often be an officer at the organization.)

# Legal Authenticator Examples

---

The example to the right shows an invalid QRDA header.

- The legalAuthenticator element is missing entirely.

```
<custodian>  
...  
</custodian>  
<participant typeCode="DEV">  
...  
</participant>
```



# Legal Authenticator Partial Correction

The example to the right shows a partially corrected QRDA header.

- The legalAuthenticator element is present, but incomplete.

```
<custodian>  
...  
</custodian>  
<legalAuthenticator>  
</legalAuthenticator>  
<participant typeCode="DEV">  
...  
</participant>
```



# Legal Authenticator Correction

The example to the right shows a corrected QRDA header.

- A complete legalAuthenticator element is present.



```
<custodian>...</custodian>
<legalAuthenticator>
  <time value="201412310000-0400"/>
  <signatureCode code="S"/>
  <assignedEntity>
    <id extension="KP00017" root="2.16.840.1.113883.19"/>
    <addr>
      <streetAddressLine>21 North Ave.</streetAddressLine>
      <city>Burlington</city>
      <state>MA</state>
      <postalCode>02368</postalCode>
      <country>US</country>
    </addr>
    <telecom use="WP" value="tel:(555)555-1003"/>
    <assignedPerson>
      <name>
        <given>Henry</given>
        <family>Seven</family>
      </name>
    </assignedPerson>
  </assignedEntity>
</legalAuthenticator>
<participant typeCode="DEV">...</participant>
```

# Section Text (Narrative) Errors

---

## Error Message

- SHALL contain exactly one [1..1] text (CONF: 3867).

## Error Meaning

- QRDA documents must contain a human readable narrative block in each section that conforms to the rules of the QRDA specification.

# Section Text Examples

The example to the right shows three invalid sections.

- Section is missing the text element entirely.
- Section has an empty text element.
- Section has a text element with invalid markup (raw HTML is not allowed).


```
<section>
...
<title>Patient Data</title>
<entry>
...
</entry>
</section>
<section>
...
<title>Patient Data</title>
<text></text>
<entry>
...
</entry>
</section>
<section>
...
<title>Patient Data</title>
<text><p>Here is some patient data</p></text>
<entry>
...
</entry>
</section>
```

# Section Text Correction

---

The example to the right shows a corrected section.

- Section has a text element with valid markup as allowed by the QRDA XML Schema.



```
<section>
...
<title>Patient Data</title>
<text><paragraph>Here is some patient
data</paragraph></text>
<entry>
...
</entry>
</section>
```



# QRDA Debugging Approaches

# Debugging QRDA Files Before Submission

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The best way to prevent submission errors is to validate your QRDA documents before submitting them.

There are two primary validation steps all implementers should perform locally:

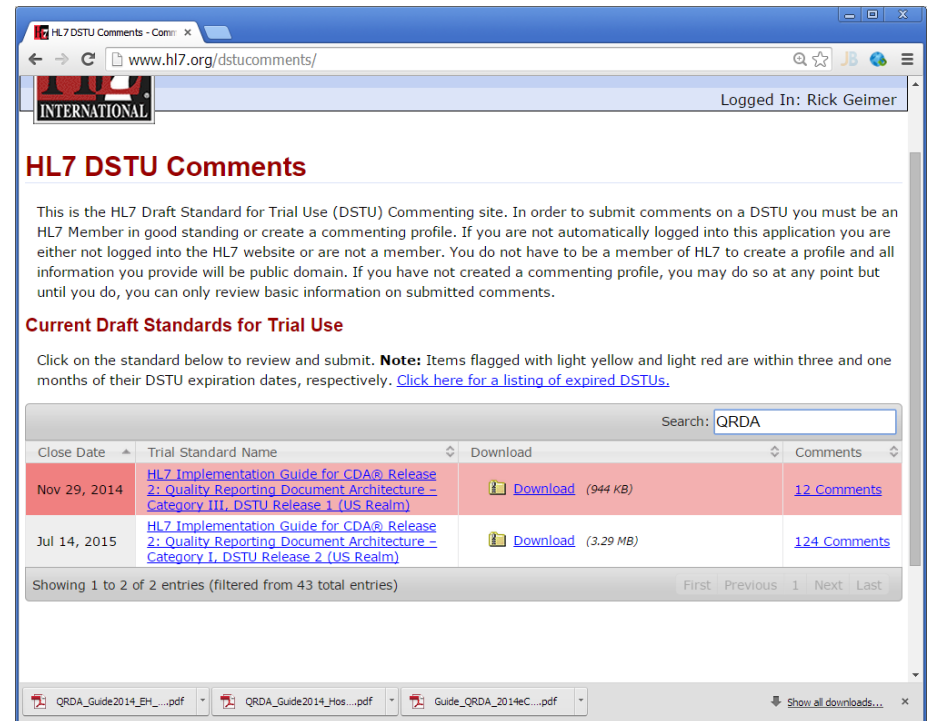
- Validate against the QRDA XML Schema from HL7; and
- Validate against the QRDA Schematron File from HL7.

Additionally, QRDA files may be submitted as Test Submissions using the operational CMS Hospitals–Inpatient system for eCQM Reporting (<https://www.qualitynet.org>).

# Downloading the HL7 QRDA Package

<http://www.hl7.org/dstucomments/>

- Search for “QRDA.”
- Go to the row for Category 1 (currently the 2<sup>nd</sup> search result).
- Click the download link.



The screenshot shows a web browser window with the URL [www.hl7.org/dstucomments/](http://www.hl7.org/dstucomments/). The page is titled "HL7 DSTU Comments" and is logged in as "Rick Geimer". The main content area contains a search bar with "QRDA" entered. Below the search bar, there is a table of search results. The table has four columns: "Close Date", "Trial Standard Name", "Download", and "Comments".

Close Date	Trial Standard Name	Download	Comments
Nov 29, 2014	<a href="#">HL7 Implementation Guide for CDA® Release 2: Quality Reporting Document Architecture – Category III, DSTU Release 1 (US Realm)</a>	<a href="#">Download</a> (944 KB)	<a href="#">12 Comments</a>
Jul 14, 2015	<a href="#">HL7 Implementation Guide for CDA® Release 2: Quality Reporting Document Architecture – Category I, DSTU Release 2 (US Realm)</a>	<a href="#">Download</a> (3.29 MB)	<a href="#">124 Comments</a>

Showing 1 to 2 of 2 entries (filtered from 43 total entries)

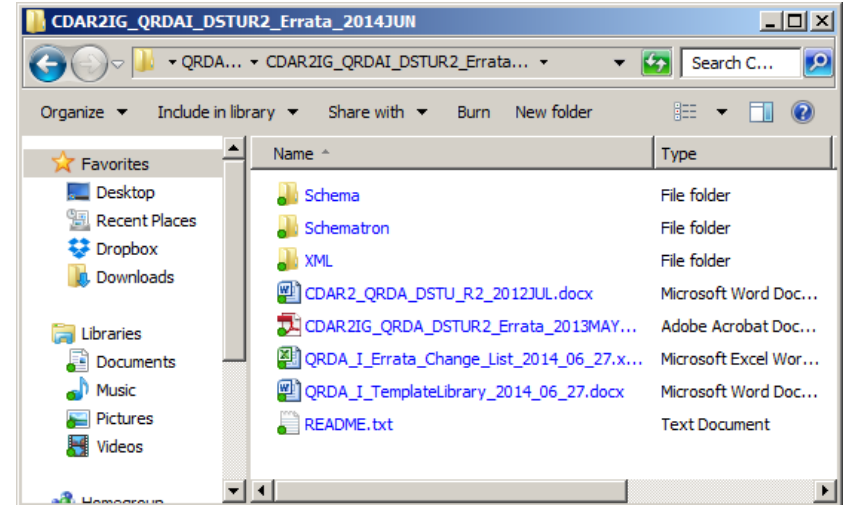
At the bottom of the browser window, there are three PDF files in the download bar: "QRDA\_Guide2014\_EH\_...", "QRDA\_Guide2014\_Hos\_...", and "Guide\_QRDA\_2014eC...".

# Navigating the HL7 QRDA Package

The ZIP file from HL7 contains several files and folders.

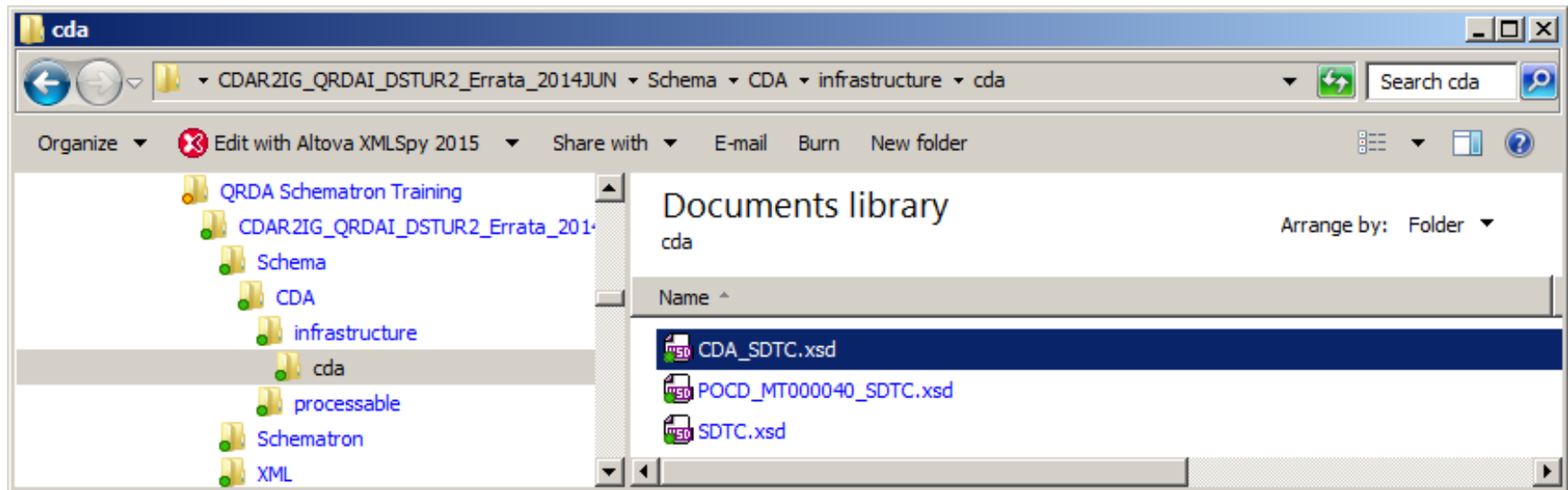
The Schema folder contains the QRDA XML Schema.

The Schematron folder contains the QRDA Schematron file and related vocabulary.



# Navigating to the QRDA XML Schema

- The main XML Schema file is called CDA\_SDTC.xsd.
  - The file is in Schema/CDA/infrastructure/cda.
  - This file is not standalone and is not safe to move by itself, as it references other files in the Schema directory of the QRDA package.
  - If you need to move the schema, move the entire Schema folder.



# Associating a QRDA file with the Schema

- To associate a QRDA file with the QRDA XML Schema, add an `xsi:schemaLocation` attribute to the `ClinicalDocument` element at the root of the QRDA file.
- The value of the attribute is the relative or absolute path to the `CDA_SDTC.xsd` file.

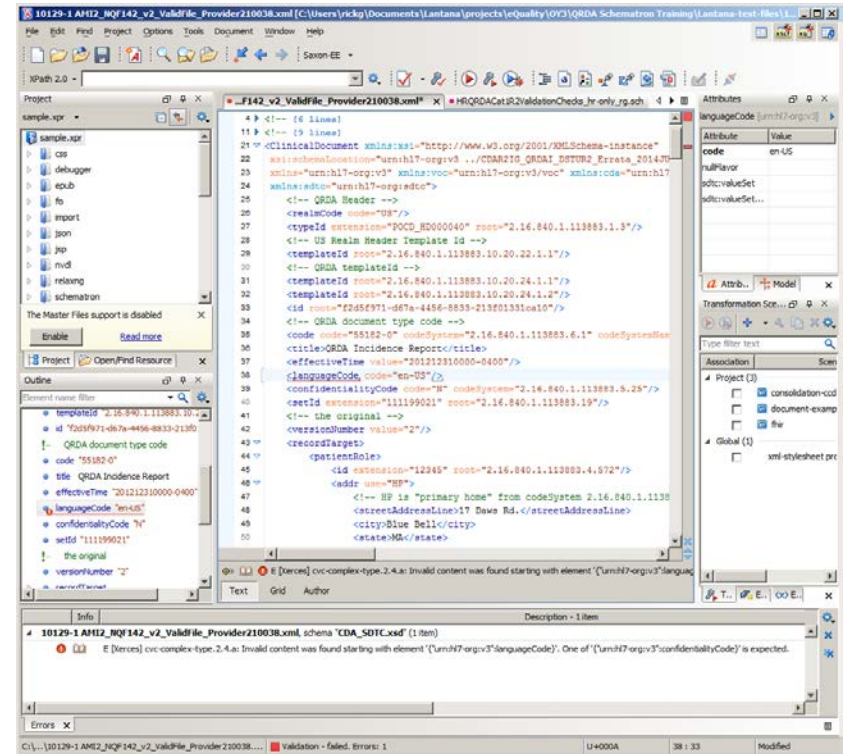
```
<ClinicalDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="urn:hl7-org:v3" xmlns:voc="urn:hl7-org:v3/voc" xmlns:cda="urn:hl7-org:v3"
  xmlns:sdtc="urn:hl7-org:sdtc"
  xsi:schemaLocation="urn:hl7-org:v3 Schema/CDA/infrastructure/cda/CDA_SDTC.xsd"
  >
...
</ClinicalDocument>
```

# Validating Against the QRDA XML Schema

Open the QRDA file in an XML editor that supports XML Schema and validate the QRDA.

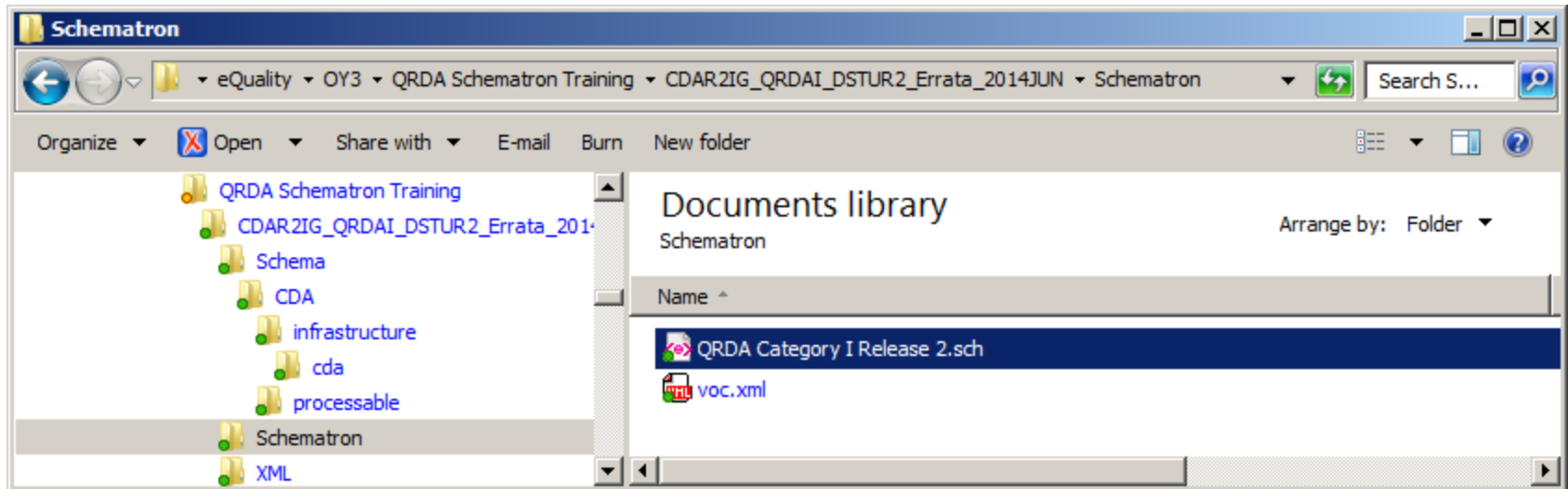
Correct any errors it reports and validate again.

The example to the right shows validation in Oxygen XML Editor.



# Navigating to the QRDA Schematron Schema

- The main XML Schema file is called “QRDA Category I Release 2.sch.”
  - This file is not standalone and is not safe to move alone.
  - It references the voc.xml file in the same directory of the QRDA package. The two files must be moved together.



# Associating a QRDA File with the Schematron

- To associate a QRDA file with the QRDA XML Schema, add an xml-model processing instruction before the ClinicalDocument element at the root of the QRDA file.
  - See <http://www.w3.org/TR/xml-model/> for information about xml-model.
- The value of the href pseudo-attribute of the processing instruction is the relative or absolute path to the CDA\_SDTC.xsd file.

```
<?xml version="1.0" encoding="utf-8" standalone="no"?>  
<?xml-model href="/Schematron/QRDA%20Category%20I%20Release%202.sch"  
type="application/xml" schematypens=http://purl.oclc.org/dsdl/schematron?>  
<ClinicalDocument xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"  
xmlns="urn:hl7-org:v3" xmlns:voc="urn:hl7-org:v3/voc" xmlns:cda="urn:hl7-org:v3"  
xmlns:sdtc="urn:hl7-org:sdtc" >  
...  
</ClinicalDocument>
```

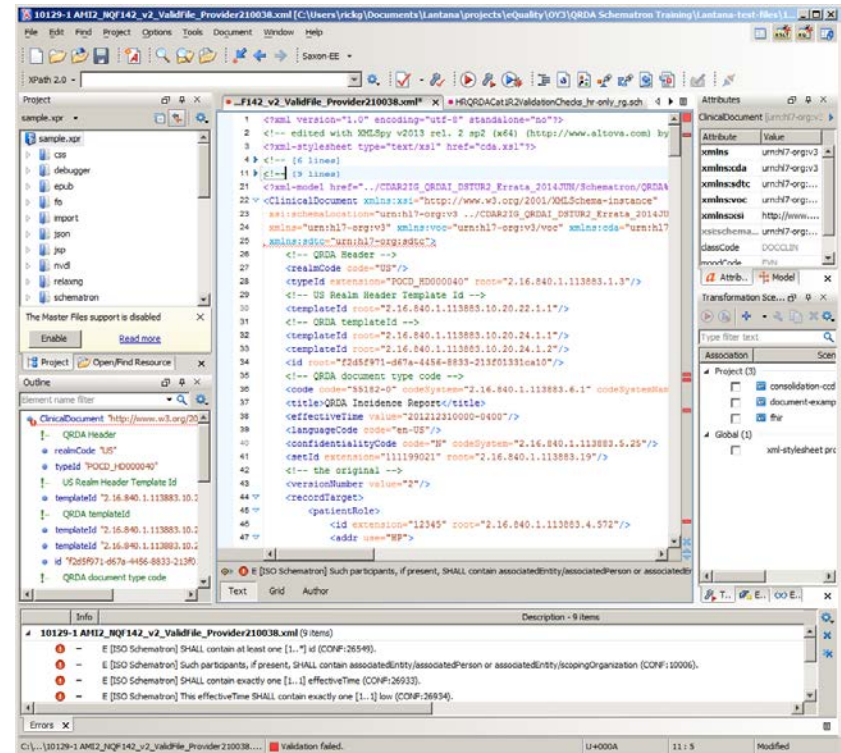
# Validating Against the QRDA XML Schema

Open the QRDA file in an XML editor that supports Schematron, and validate the QRDA.

If prompted for a phase, choose “errors.”

Correct any errors it reports, and validate again until error-free.

The example to the right shows validation in Oxygen XML Editor.



# Validating Test Submissions Using CMS Operational System

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- Submitters can upload test QRDA files at any time using the CMS Hospitals–Inpatient system for eCQM Reporting via the secure QualityNet website (<https://www.qualitynet.org>).
- Test submissions are validated against the same schemas and rules used for Production files; this allows users to find and correct errors prior to submitting files as Production.
- Test submissions do not count towards Meaningful Use for Electronic Health Record (EHR) or Inpatient Quality Reporting (IQR) Programs.
- Test submissions are kept separate from Production submissions for reporting purposes.
- Test files are flagged as “Test Cases” on the Submission Reports.
- Two IQR EHR reports display feedback messages associated with each file submitted:
  - **EHR Hospital Reporting - Submission Detail Report:** reports Errors and Warnings from file validation and indicates file status as Accepted or Rejected; and
  - **EHR Hospital Reporting - eCQM Submission and Performance Feedback Report:** reports eCQM measure outcome messages for Accepted files.



**Questions?**

# Resources

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General questions about submitting test and production files:

QualityNet HelpDesk - [Qnetsupport@hcgis.org](mailto:Qnetsupport@hcgis.org)

1-866-288-8912 7 a.m.-7 p.m. CT, Monday through Friday

The JIRA – ONC Project Tracking website (<http://oncprojecttracking.org/>) is a resource to submit questions for the following:

- Issues identified with eCQM logic;
- Reviewing FAQs;
- Obtaining clarification on specifications;
- Asking questions regarding CQM certification;
- Submitting questions and/or comments about the Combined QRDA Implementation Guide for 2015; and
- Questions regarding the EHR Incentive Program.