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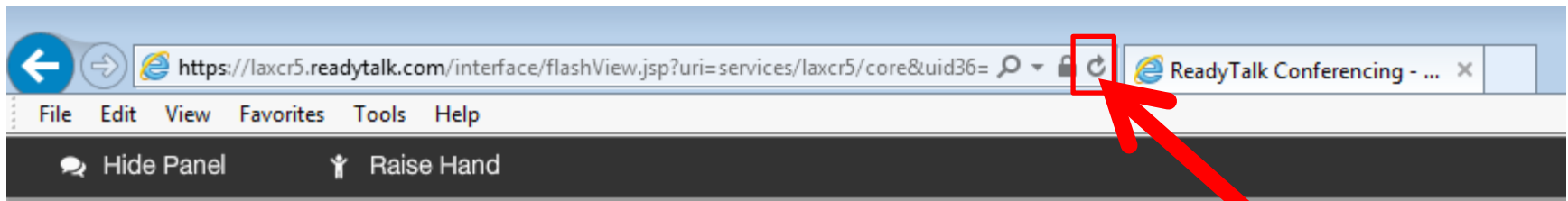
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Audio from computer speakers breaking up? Audio suddenly stop?

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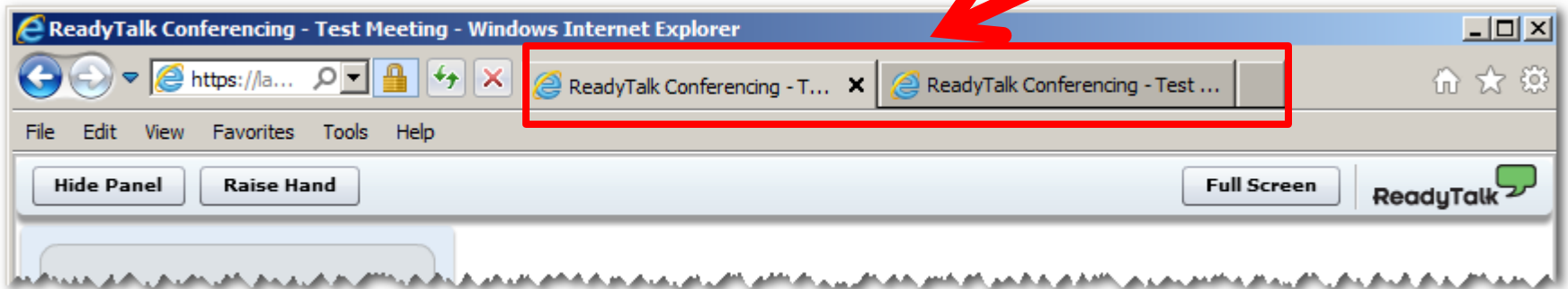
F5 Key
Top Row of Keyboard

Location of Buttons

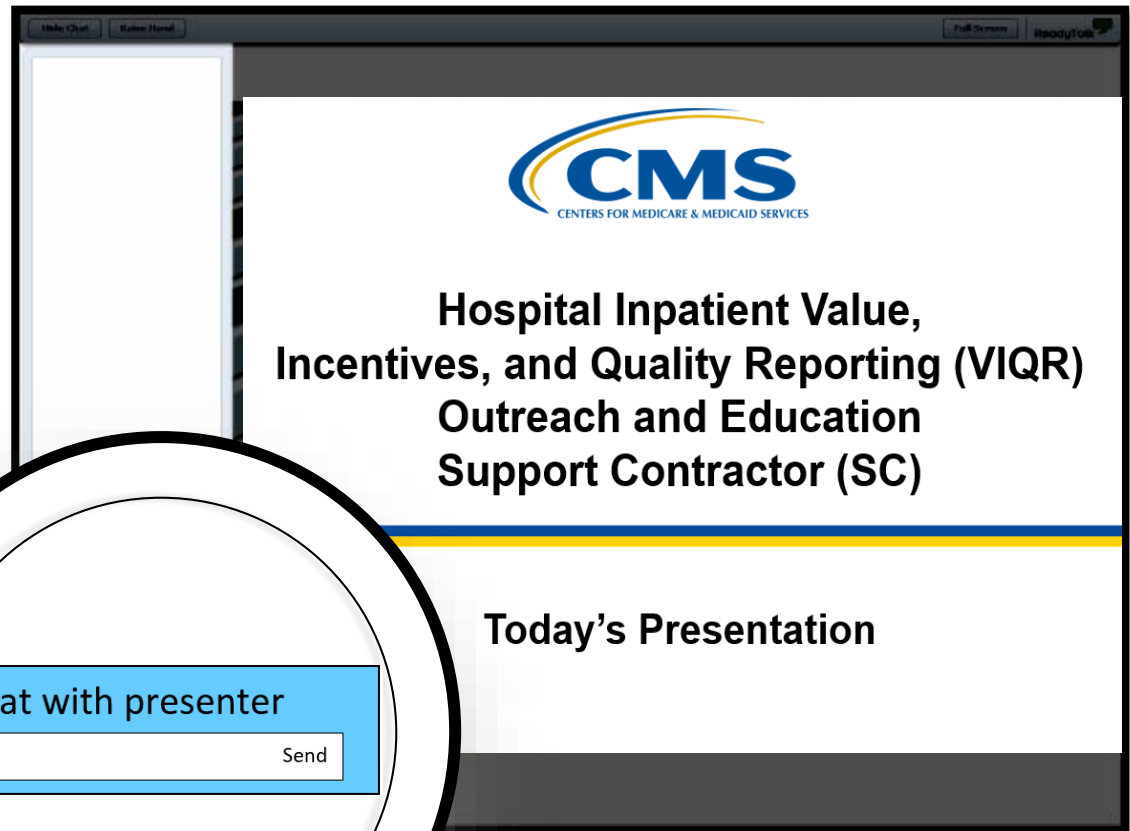Refresh

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Hospital Inpatient Value, Incentives, and Quality Reporting (VIQR) Outreach and Education Support Contractor (SC)

Today's Presentation

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How to Correct Common Schema Validation Errors for Hospital QRDA Category I Submissions and Other Guidance

December 21, 2017

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Outreach and Education Support Contractor (SC)

Purpose

This presentation will provide participants with an overview of correcting common schema validation errors for hospital Quality Reporting Document Architecture (QRDA) Category I file submissions.

This information is applicable to the following programs:

- Hospital Inpatient Quality Reporting (IQR) Program
- Medicare Electronic Health Record (EHR) Incentive Programs for eligible hospitals (EHs) and critical access hospitals (CAHs)

Objectives

Participants will be able to perform the following:

- Identify and correct common validation errors during the file submission process

- Understand the technical instructions regarding the Act Wrapper Guidance

- Learn about valid reporting of custodian IDs in QRDA Category I files.

Topics

- Common Clinical Document Architecture (CDA) schema validation errors and the process for successfully testing, validating, and submitting QRDA Category I documents
- Act Wrapper guidance
- Technical guidance for valid reporting of custodian ID using CMS Certification Numbers (CCNs) in QRDA Category I files for hospital quality reporting programs

How to Correct Common Schema Validation Errors for Hospital QRDA Category I Submissions and Other Guidance

CDA Schema Validation Errors and the Process for Successfully Testing, Validating, and Submitting QRDA Category I Documents
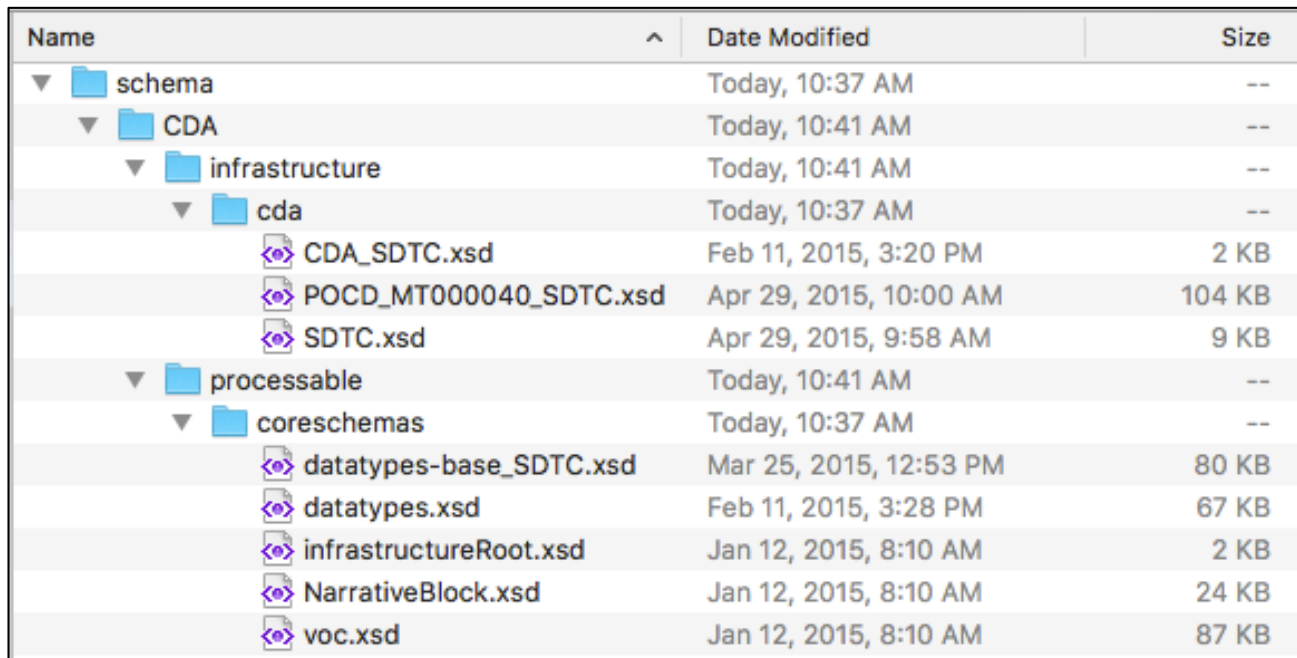
CDA Schema Validation Errors

- Several JIRA tickets were submitted due to CDA schema validation failing on submitted documents.
  - o **CONF: CMS_0072** The document does not conform to QRDA document formats accepted by CMS.
  - o This means that the XML structure of the document is incorrect.

CDA Schema Validation Errors

- The QRDA standard is an implementation of the CDA standard.
  - QRDA documents must also be valid CDA documents.
- This means that a QRDA document MUST comply with the CDA SDTC schema.
  - The CDA schema is distributed with the HL7 QRDA Category I documents from HL7.
    - https://www.hl7.org/implement/standards/product_brief.cfm?product_id=35

CDA Schema Validation Errors

- The CDA schema is comprised of eight XSD files in a defined directory structure.
  - Download the zip and extract it out to a directory, but do not move the individual XSD files.
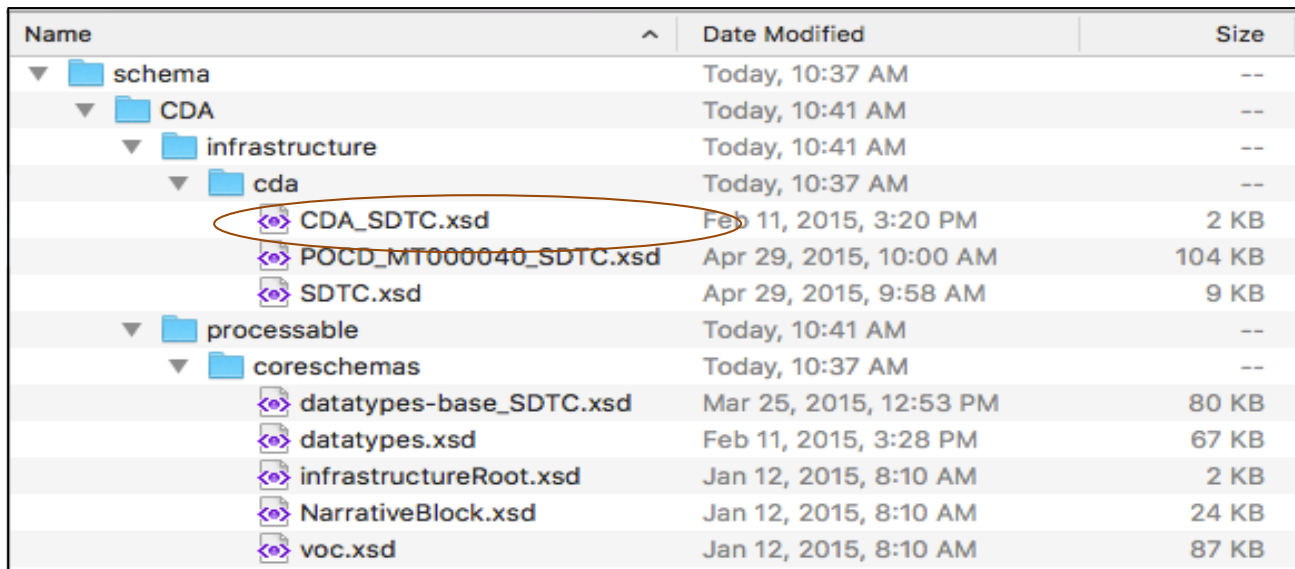
Name	Date Modified	Size
▼ 📁 schema	Today, 10:37 AM	--
▼ 📁 CDA	Today, 10:41 AM	--
▼ 📁 infrastructure	Today, 10:41 AM	--
▼ 📁 cda	Today, 10:37 AM	--
CDA_SDTC.xsd	Feb 11, 2015, 3:20 PM	2 KB
POCD_MT000040_SDTC.xsd	Apr 29, 2015, 10:00 AM	104 KB
SDTC.xsd	Apr 29, 2015, 9:58 AM	9 KB
▼ 📁 processable	Today, 10:41 AM	--
▼ 📁 coreschemas	Today, 10:37 AM	--
datatypes-base_SDTC.xsd	Mar 25, 2015, 12:53 PM	80 KB
datatypes.xsd	Feb 11, 2015, 3:28 PM	67 KB
infrastructureRoot.xsd	Jan 12, 2015, 8:10 AM	2 KB
NarrativeBlock.xsd	Jan 12, 2015, 8:10 AM	24 KB
voc.xsd	Jan 12, 2015, 8:10 AM	87 KB

CDA Schema Validation Errors

- The main XSD is named CDA_SDTC.xsd
  - It references the other XSD files.
  - To validate a QRDA document against the CDA schema, validate with the CDA_SDTC.xsd file.

Name	Date Modified	Size
▼ 📁 schema	Today, 10:37 AM	--
▼ 📁 CDA	Today, 10:41 AM	--
▼ 📁 infrastructure	Today, 10:41 AM	--
▼ 📁 cda	Today, 10:37 AM	--
CDA_SDTC.xsd	Feb 11, 2015, 3:20 PM	2 KB
POCD_MT000040_SDTC.xsd	Apr 29, 2015, 10:00 AM	104 KB
SDTC.xsd	Apr 29, 2015, 9:58 AM	9 KB
▼ 📁 processable	Today, 10:41 AM	--
▼ 📁 coreschemas	Today, 10:37 AM	--
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infrastructureRoot.xsd	Jan 12, 2015, 8:10 AM	2 KB
NarrativeBlock.xsd	Jan 12, 2015, 8:10 AM	24 KB
voc.xsd	Jan 12, 2015, 8:10 AM	87 KB

CDA Schema Validation Errors

- The following example shows how to use OxygenXML to do a schema validation using the CDA_SDTC.xsd file.

    o Most XML editing tools have the ability to do schema validation.

- The first step is to open the QRDA XML file you want to validate in OxygenXML.

CDA Schema Validation Errors

CDA Schema Validation Errors

- With the file open in OxygenXML, select Document->Validate->Validate With

- In the "Validate With" window, provide the following:
  - URL: The location of the CDA_SDTC.xsd file on your system.
  - Schema type: XML Schema

- Select the OK button.

CDA Schema Validation Errors

CDA Schema Validation Errors

Select the CDA_SDTC.xsd file from your local directory.
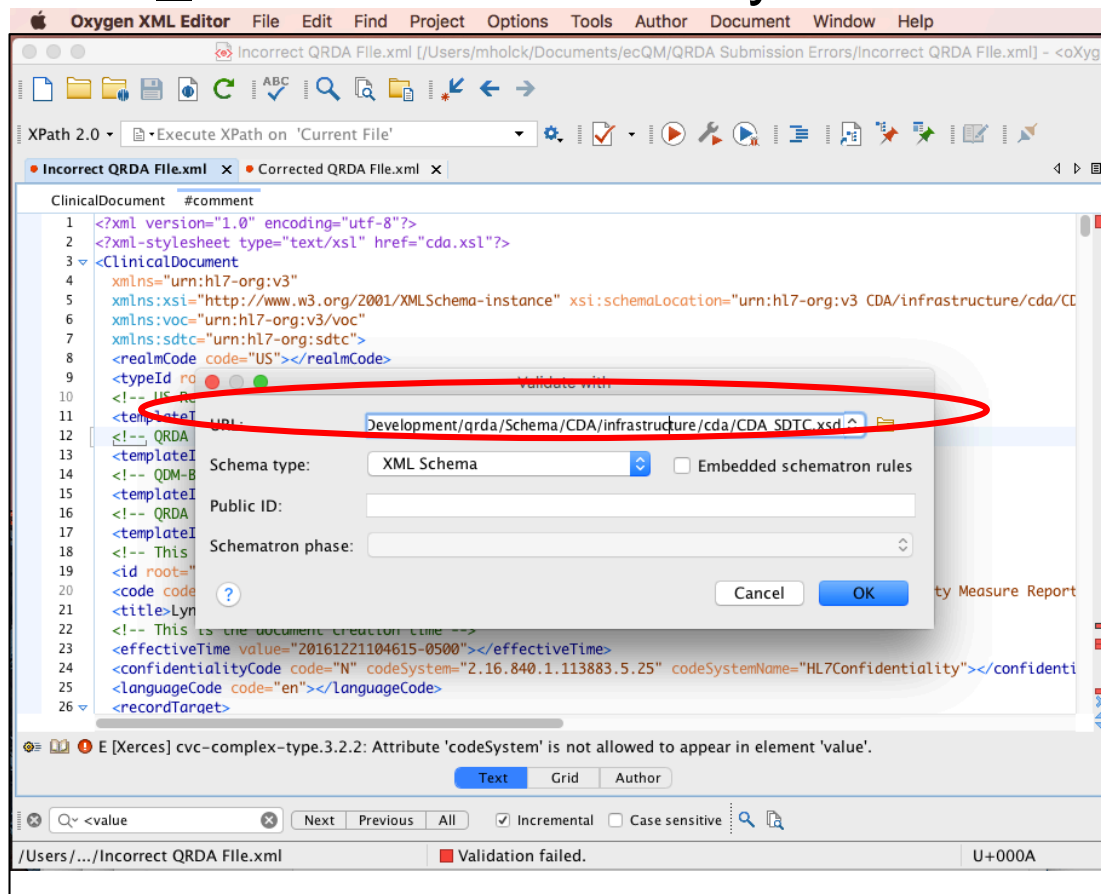
CDA Schema Validation Errors

- This will perform the validation and provide detailed descriptions of any schema validation errors.
    - Errors are displayed in the Errors pane at the bottom of the editor.

	Info	Description – 8 items		Resource
▼		**Incorrect QRDA FIle.xml**, schema **"CDA_SDTC.xsd"** (8 items)		
	❗ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'codeSystem' is not allowed to appear in element 'value'.		Incorrect QRDA FIle.xml
	❗ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'codeSystemName' is not allowed to appear in element 'value'.		Incorrect QRDA FIle.xml
	❗ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'code' is not allowed to appear in element 'value'.		Incorrect QRDA FIle.xml
	❗ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'displayName' is not allowed to appear in element 'value'.		Incorrect QRDA FIle.xml

Errors ✕

CDA Schema Validation: Three Common Errors

These are the common errors reported several times in JIRA tickets:

1. Value elements with no xsi:type
2. Value elements with invalid attributes
3. Duplicated id elements

Issue 1:
Value Elements with No xsi:type

- <value> elements are defined by default as abstract and can be of any data type, but must be cast to a type in a QRDA document.

  - Usually when the value is a number, it is done correctly.

    - <value xsi:type="INT" value="2"></value>

  - When the value is a nullFlavor it is not as clear what the type should be.

Incorrect   **Correct**

```
<statusCode code="completed"></statusCode>
<effectiveTime>
  <!-- Attribute: start datetime -->
  <low value="20161020213000-0400"></low>
  <!-- Attribute: stop datetime -->
  <high value="20161020213000-0400"></high>
</effectiveTime>
<!-- Optional priorityCode element goes here -->
<value nullFlavor="NA"></value>
      </observation>
    </entry>
  </section>
</component>
</structuredBody>
</component>
</ClinicalDocument>
```

```
<statusCode code="completed"></statusCode>
<effectiveTime>
  <!-- Attribute: start datetime -->
  <low value="20161020213000-0400"></low>
  <!-- Attribute: stop datetime -->
  <high value="20161020213000-0400"></high>
</effectiveTime>
<!-- Optional priorityCode element goes here -->
<value xsi:type="ST" nullFlavor="NA"></value>
      </observation>
    </entry>
  </section>
</component>
</structuredBody>
</component>
</ClinicalDocument>
```

⊘ 📖   E [Xerces] cvc-type.2: The type definition cannot be abstract for element value.

Fix: Provide a valid xsi:type for the value element.

Issue 2:
Value Elements with Invalid Attributes

- When a <value> element has a specified xsi:type that will determine what attributes it is allowed to have based on the data type.

- In this example the <value> element has been specified as an xsi:type="PQ"

  o PQ means physical quantity.

  o Valid attributes for PQ are value and unit.

    ▪ The valid PQ data type attributes are included in this example.

    ▪ The additional coded data type attributes are not valid for the PQ data type and cause the errors.

Issue 2:
Value Elements with Invalid Attributes

Incorrect   **Correct**

```
<effectiveTime>                                  <effectiveTime>
  <!-- Attribute: start datetime -->               <!-- Attribute: start datetime -->
  <low value="20160923051900"></low>              <low value="20160923051900"></low>
  <!-- Attribute: stop datetime -->                <!-- Attribute: stop datetime -->
  <high value="20160923051900"></high>            <high value="20160923051900"></high>
</effectiveTime>                                 </effectiveTime>
<!-- QDM Attribute: Result -->                   <!-- QDM Attribute: Result -->
<value codeSystem="2.16.840.1.113883.6.1"        <value xsi:type="PQ" value="86" unit="MG/DL"></value>
  codeSystemName="LOINC" code="2089-1"          </observation>
  displayName="LDL CHOL. ESTIMATED"           </entry>
  xsi:type="PQ"                                 <entry typeCode="DRIV">
  sdtc:valueSet="2.16.840.1.113883.3.117.1.7.1.215"   <act classCode="ACT" moodCode="EVN">
  value="86" unit="MG/DL"></value>                <!-- Conforms to C-CDA Problem Concern Act (V2) -->
</observation>                                      <templateId root="2.16.840.1.113883.10.20.22.4.3" extens
</entry>                                           <!-- Diagnosis Active Concern Act -->
```

⊘ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'codeSystem' is not allowed to appear in element 'value'.	
⊘ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'codeSystemName' is not allowed to appear in element 'value'.	
⊘ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'code' is not allowed to appear in element 'value'.	
⊘ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'displayName' is not allowed to appear in element 'value'.	
⊘ 📖	E [Xerces] cvc-complex-type.3.2.2: Attribute 'sdtc:valueSet' is not allowed to appear in element 'value'.	

Fix: Remove the extra invalid attributes from the value element.

Issue 3:
Duplicated id Elements

- The <id> element is duplicated and the second one is in an invalid location in the template.

Incorrect   **Correct**


```
<!-- Set id or generate GUID -->
<id root="F2CD6F4E-798A-B921-1E35-E6A5858D26E5"></id
<statusCode code="active"></statusCode>
<effectiveTime xsi:type="IVL_TS">
  <!-- Attribute: start datetime -->
  <low value="20150414000000"></low>
  <!-- Attribute: stop datetime -->
  <high value="20160922123700"></high>
</effectiveTime>
<id root="F2CD6F4E-798A-B921-1E35-E6A5858D26E5"></id
<!-- Optional routeCode element goes here -->
<doseQuantity nullFlavor="NI"></doseQuantity>
<consumable>
```

```
<!-- Set id or generate GUID -->
<id root="F2CD6F4E-798A-B921-1E35-E6A5858D26E5"></id>
<statusCode code="active"></statusCode>
<effectiveTime xsi:type="IVL_TS">
  <!-- Attribute: start datetime -->
  <low value="20150414000000"></low>
  <!-- Attribute: stop datetime -->
  <high value="20160922123700"></high>
</effectiveTime>
<!-- Optional routeCode element goes here -->
<doseQuantity nullFlavor="NI"></doseQuantity>
<consumable>
  <manufacturedProduct classCode="MANU">
```

⊘ 📖   E [Xerces] cvc-complex-type.2.4.a: Invalid content was found starting with element '{"urn:hl7-org:v3":id}'.

Fix: Remove the duplicate id element.

How to Correct Common Schema Validation Errors for Hospital QRDA Category I Submissions and Other Guidance

Act Wrapper Guidance

Act Wrapper Guidance

- Background
  - CMS is issuing technical instructions for QRDA Category I template submissions for eCQM reporting for the following programs:
    - Hospital Inpatient Quality Reporting
    - Medicare EHR Incentive Program for EHs and CAHs.
  - This guidance is for eCQM submissions for calendar year (CY) 2017 and QRDA Category I files only.

Act Wrapper Guidance

- The Issue
  - For implementers to have their eCQMs calculated correctly by the measure engine, they must submit the proper QRDA templates for the QDM data types.
  - Currently, there is no validation check to ensure that the QRDA template is contained within an Act template structure. The measure engine therefore cannot identify the datatype in the measure calculation because it looks for the act template separately.
  - This issue applies to the EH eCQMs that use the following QDM data types in their measure specifications for the CY 2017 reporting period:
    - Diagnosis
    - Device, Order
    - Encounter, Order
    - Encounter, Performed
    - Transfer From
    - Transfer To

Act Wrapper Guidance

- Resolution and Guidance
  - In the HL7 QRDA Category I Release 1, STU Release 3.1, a new QRDA template that uses the Act class structure, which supports the negationInd attribute, was created and serves as a wrapper (referred to as "Act Wrapper").
  - Submitters are advised to actively ensure that data for the affected QDM data types are reported within the correct corresponding Act Wrapper template so that the data will be processed correctly.

Act Wrapper Guidance

Encounter Performed Example

Without Act Wrapper

```
<encounter classCode="ENC" moodCode="EVN">
    <!-- Conforms to C-CDA R2.1 Encounter Activity (V3) -->
    <templateId root="2.16.840.1.113883.10.20.22.4.49"
            extension="2015-08-01"/>
    <!-- Encounter Performed (V3) templateId-->
    <templateId root="2.16.840.1.113883.10.20.24.3.23"
        extension="2016-02-01"/>
    <!-- the encounter/id/@root -->
    <id root="12345678-9d11-439e-92b3-5d9815ff4de1"/>
    ...
</encounter>
```

Without the Act Wrapper, this will still pass Schematron validation but the encounter will not be included in the measure calculation.

With Act Wrapper

```
<act classCode="ACT" moodCode="EVN">
    <!--Encounter performed Act -->
    <templateId root="2.16.840.1.113883.10.20.24.3.133"/>
    <id root="ec8a6ff8-ed4b-4f7e-82c3-e98e58b45de7"/>
    <code code="ENC" codeSystem="2.16.840.1.113883.5.6"
        displayName="Encounter" codeSystemName="ActClass"/>
    <entryRelationship typeCode="SUBJ">
        <encounter classCode="ENC" moodCode="EVN">
            <!-- Conforms to C-CDA R2.1 Encounter Activity (V3) -->
            <templateId root="2.16.840.1.113883.10.20.22.4.49"
                extension="2015-08-01"/>
            <!-- Encounter Performed (V3) templateId-->
            <templateId root="2.16.840.1.113883.10.20.24.3.23"
                extension="2016-02-01"/>
            <!-- the encounter/id/@root -->
            <id root="12345678-9d11-439e-92b3-5d9815ff4de1"/>
            ...
        </encounter>
    </entryRelationship>
</act>
```

How to Correct Common Schema Validation Errors for Hospital QRDA Category I Submissions and Other Guidance

Technical Guidance for Valid Reporting of Custodian ID Using CCNs in QRDA Category I Files for Hospital Quality Reporting (HQR) Programs

Technical Guidance for Valid Reporting of Custodian ID using CCNs in QRDA Category I Files for Hospital Quality Reporting Programs

- CMS has issued technical guidance for vendors and data submitters on how to electronically submit hospital custodian ID using CCNs.
- Reporting CCN is required in QRDA Category I files for HQR programs.
- This guidance affects the following:
  - eCQM submissions for calendar year 2017
  - QRDA Category I files for the Hospital IQR Program and the Medicare EHR Incentive Program for EHs and CAHs

Technical Guidance for Valid Reporting of Custodian ID using CCNs in QRDA Category I Files for Hospital Quality Reporting Programs

- The Issue:
  - CCN is represented by using the custodian/assignedCustodian/representedCustodianOrganization/id element in the QRDA Category I document header specified by the CMS template called the "QRDA Category I Report."
  - The Schematron rules published for the 2017 CMS QRDA I Implementation Guide erroneously enforces the six to 10 characters length check on all hospital identifiers.
  - If identifiers other than CCN with values shorter than six characters or longer than 10 characters are provided, an error will be triggered.

Technical Guidance for Valid Reporting of Custodian ID using CCNs in QRDA Category I Files for Hospital Quality Reporting Programs

- The Resolution:
  - Submitters are advised to actively ensure that only a CCN number and no other identifiers are submitted for custodian/assignedCustodian/representedCustodianOrganization/id

Technical Guidance for Valid Reporting of Custodian ID using CCNs in QRDA Category I Files for Hospital Quality Reporting Programs

Example xml snippet that validates successfully for the 2017 reporting period for QRDA I test submission to HQR:

```
<custodian>
 <assignedCustodian>
  <representedCustodianOrganization>
  <!-- @extension attribute contains the submitter's CCN.
    @nullFlavor is not allowed. -->
    <id root="2.16.840.1.113883.4.336"
extension="800890"/>
    <name>Good Health Hospital</name>
    <telecom value="tel:(555)555-1212" use="WP"/>
    <addr use="WP">
     <streetAddressLine>17 Daws
Rd.</streetAddressLine>
     <city>Blue Bell</city>
     <state>MA</state>
     <postalCode>02368</postalCode>
     <country>US</country>
    </addr>
   </representedCustodianOrganization>
  </assignedCustodian>
</custodian>
```

Example xml snippet that results in error:

```
<custodian>
 <assignedCustodian>
  <representedCustodianOrganization>
  <!-- @extension attribute contains the submitter's CCN.
    @nullFlavor is not allowed. -->
    <id root="2.16.840.1.113883.4.336" extension="800890"/>
  <!—- TIN identifier -->
    <id root="2.16.840.1.113883.4.336"extension="12345678901"/>
    <name>Good Health Hospital</name>
    <telecom value="tel:(555)555-1212" use="WP"/>
    <addr use="WP">
     <streetAddressLine>17 Daws Rd.</streetAddressLine>
     <city>Blue Bell</city>
     <state>MA</state>
     <postalCode>02368</postalCode>
     <country>US</country>
    </addr>
   </representedCustodianOrganization>
  </assignedCustodian>
</custodian>
```

Helpful Resources

- eCQI Resource Center QRDA Space

  o https://ecqi.healthit.gov/qrda

- Office of the National Coordinator for Health Information Technology (ONC) QRDA JIRA Issue Tracker

  o https://oncprojectracking.healthit.gov/support/browse/QRDA

- *QualityNet* Support

  o https://www.qualitynet.org/

- Detailed guidance and examples for proper submission of QRDA Category I templates are found on the eCQI Resource Center QRDA Space.
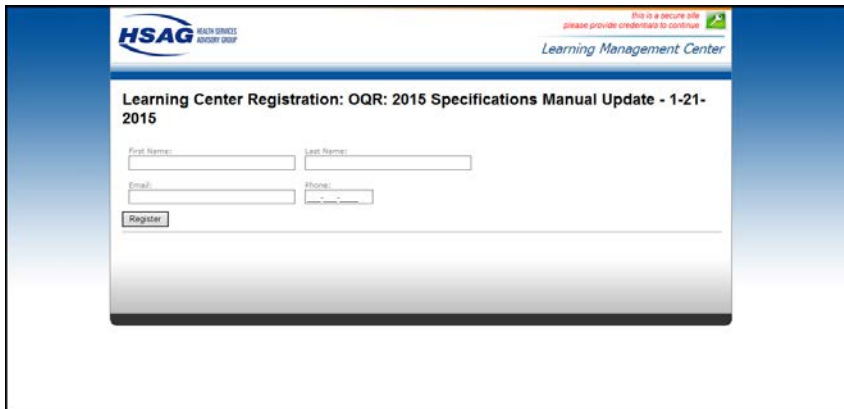
Questions

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- Complete the survey and register for credit.

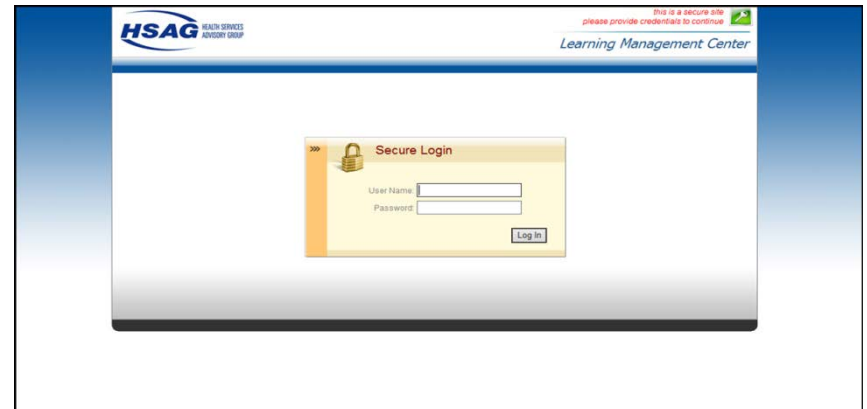- Registration is automatic and instantaneous.

Register for Credit

New User

- Use personal email and phone.
- Go to email address; finish process.

Existing User

- Entire email is your user name.
- You can reset your password.

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