

ePrescribing (eRx) Validation Tool Tutorial and Guide

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December 5th, 2012

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DRAFT – (NIST eRx_Tool_Tutorial_12052012 v3.ppt)

ePrescribing Validation Tool Overview

Purpose: The tool validates eRx messages created by Electronic Health Records (EHR) technology and is intended for certifying 2014 Edition Meaningful Use EHR technology.

Tool Key Capabilities	
Context-free Testing (EDI and XML)	(No Test Cases - Test any eRx message in EDI or XML format created by EHR) <ul style="list-style-type: none">• Context is unknown to validation tool• Provides a simple and convenient method for testing message structure and most vocabulary
Context-based Testing (EDI and XML)	(Test Cases - Test eRx message in EDI or XML format associated with a specific test scenario) <ul style="list-style-type: none">• Context is known to validation tool• All conformance requirements of the eRx implementation guide can be assessed
Profile Viewer	Allows user to look up component of message that generated an error and view the related conformance data (such as if Required, format, value, etc.) to correct message. Allows user to view additional rules to correct schematron errors in message.
Vocabulary Browser	Allows user to look up table value that generated an error and view valid values to correct message. (Currently only available for EDI format)
Documentation	Provides access to documents which will assist in using the tool (including test procedure, test cases, profile descriptions, vocabulary descriptions and validation tool download).

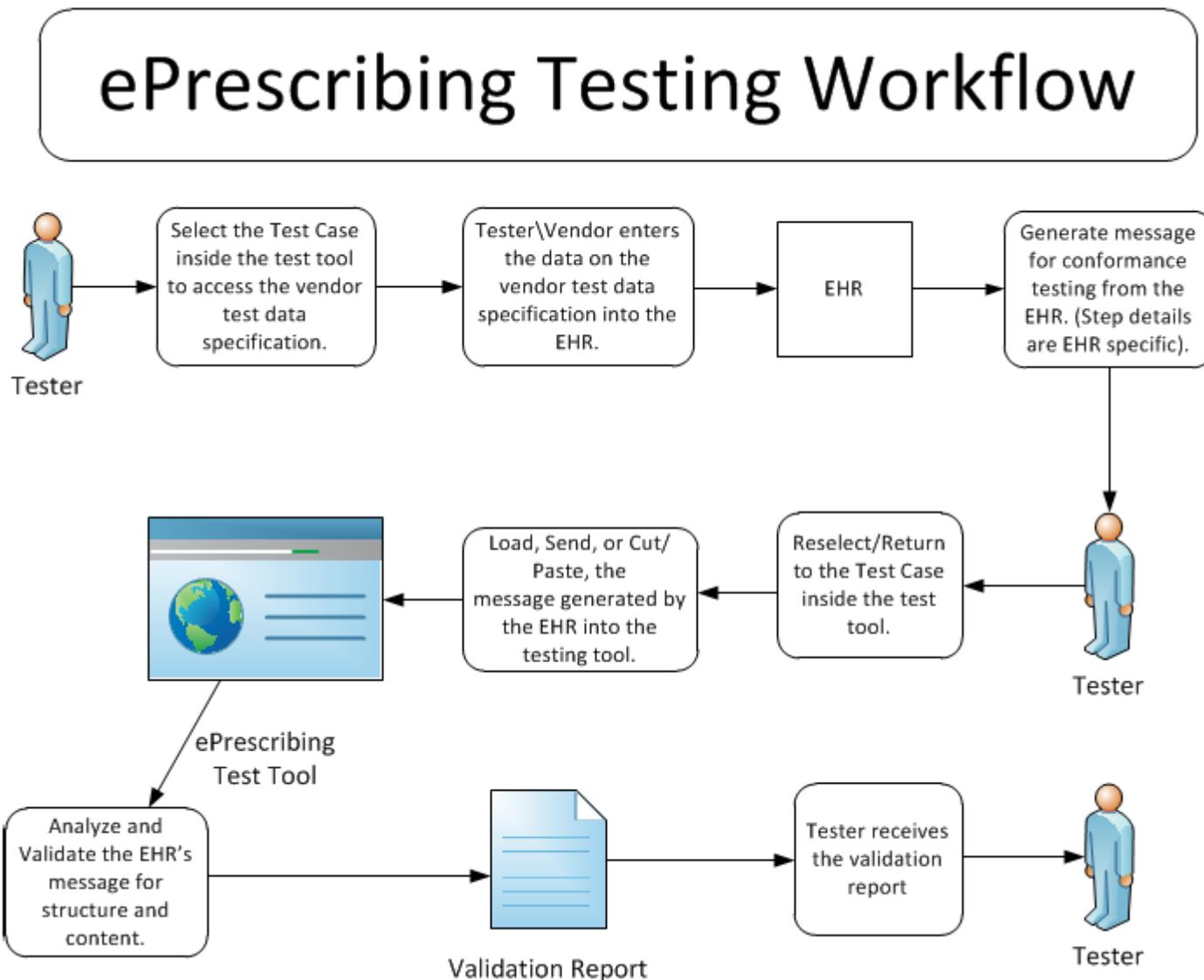
Get started today! No registration or log in credentials are needed. Simply click link on the link below and select EDI or XML validation. Paste/load message into tool to obtain Validation report.

<http://erx-testing.nist.gov>

NOTE: Web Application is compatible with Firefox; Chrome; IE8; IE9

More Info? Register to Google Group at: <https://groups.google.com/d/forum/erx-testing-tool> to ask questions and provide feedback.

eRx Testing Process



**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

eRx EDI Context-based Test Scenario Walk Through Tool Demonstration

eRx EDI Context-based Testing Work Flow (Step by Step)

1) Select Test Case and Review Test Story

- Open eRx Validation tool using link: <http://erx-testing.nist.gov> and click on EDI Validation.
- In the EDI Validation Tool, click on Content-based Validation tab.
- Click on arrow to expand the Test Scenario and select a Test Case.
- Review Test Story displayed.

2) Review Test Data Specification

- Click on Test Data Specification tab.
- Review information provided for data elements of test message.

3) Create test message

- Using the EHR technology, create the eRx test message with the test data provided for the selected Test Step (step 2).

4) Load Test Step and import test message

- Click on Select button to load the Test Step.
- Validation page displays.
- Click on Browse Message button.
- Message Uploader Dialog window displays.
- Click on Select Message button.
- Open test message file created in step 3 to upload it.

eRx EDI Context-based Testing Work Flow (Step by Step – cont'd)

5) Validate test message and review validation errors message

- Uploaded test message displays.
- If message fails validation, errors will display in Message Validation Result section of page.
- Review error information provided to correct message.
- Click on Location link to highlight the data element causing the error within the Message Tree and Content.
- Description explains why error occurred. Format or table of data element may be provided.
- Column data element is located within message is provided.
- Click on page numbers to view additional pages of errors.
- Total number of errors displays.
- Location link displays table name.

6) Generate Message Validation Report

- Click Report button to view Validation Report details.
- Message Validation Report may be downloaded as a PDF, XML, Word doc, HTML file.
- Message Validation Report may be printed.

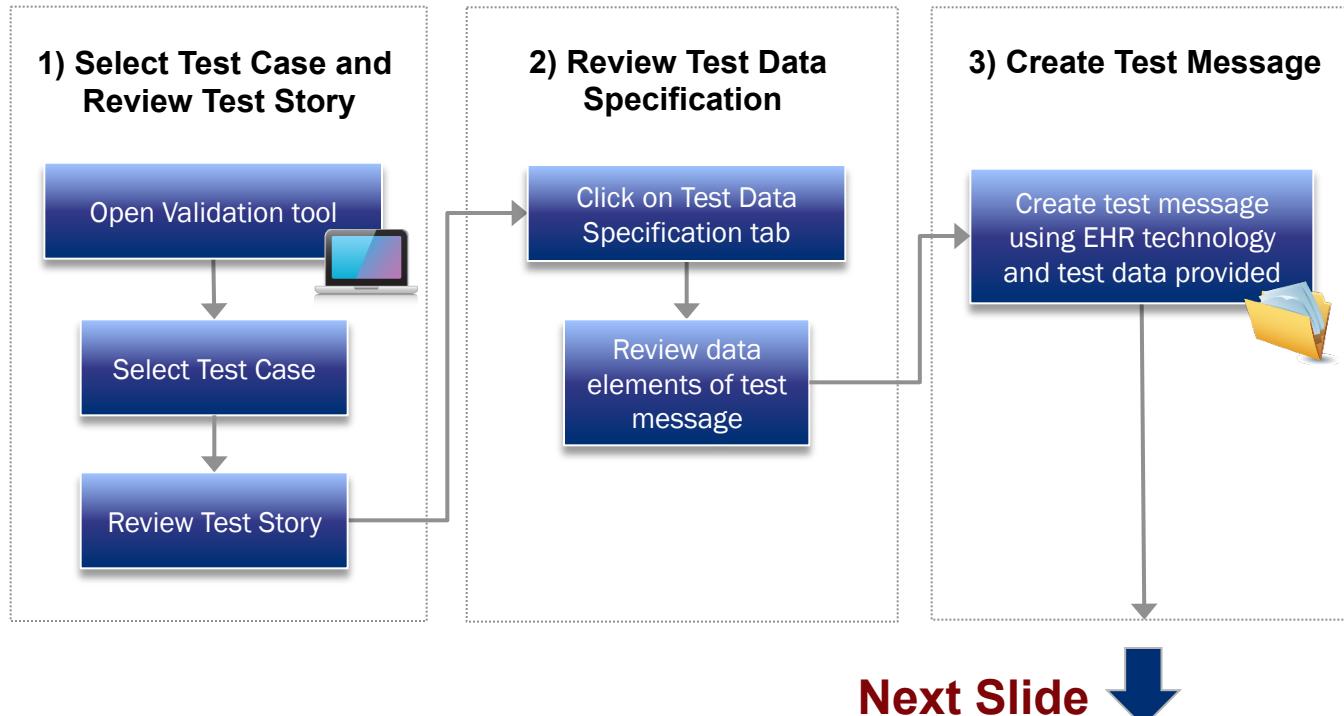
7) Look up valid data element values and tables

- Click on Profile Viewer tab.
- Data elements may be filtered by Usage. Select R, RE, C (Only) to view only required, required but may be empty and conditional elements. Select R, RE, C, O, X (All) to view all data elements, including optional and not supported elements.
- Click on a tab to filter data elements by segment. The Full tab displays data elements of all segments.
- Locate data element using table name from the location link.
- Usage will indicate whether data element is required. The value R indicates it is required.
- Make a note of the table ID.
- Click on Vocabulary tab.
- Locate and select table ID.
- Valid values are listed.
- Click on Context-based Validation tab to return to message.

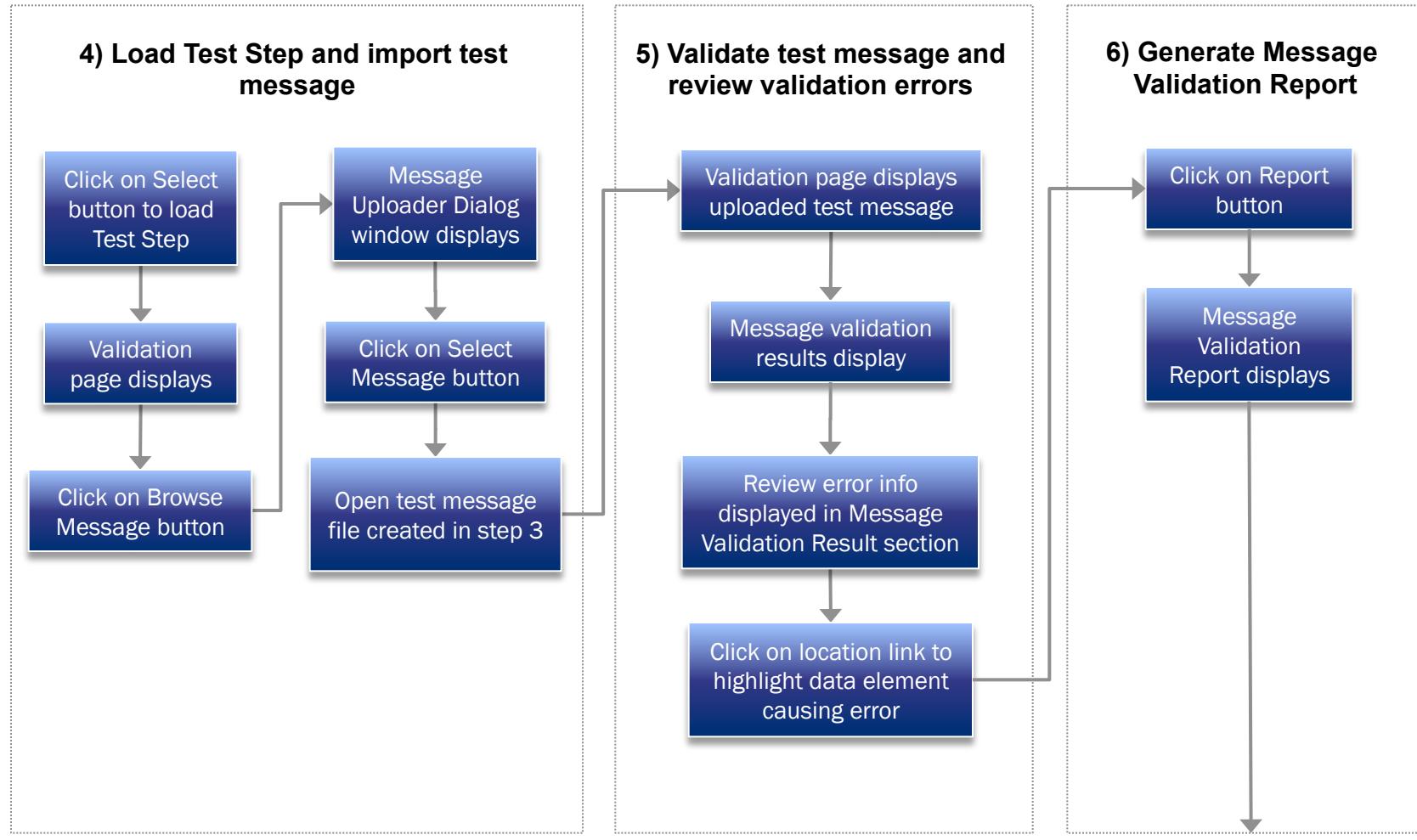
eRx EDI Context-based Testing Work Flow

In the next few slides, this test scenario will walk through the steps needed to:

- 1) Select Test Case and Review Test Story
- 2) Review Test Data Specification
- 3) Create Test Message
- 4) Load Test Step and import test message
- 5) Validate test message and review validation errors
- 6) Generate Message Validation Report
- 7) Look up valid data element values and tables

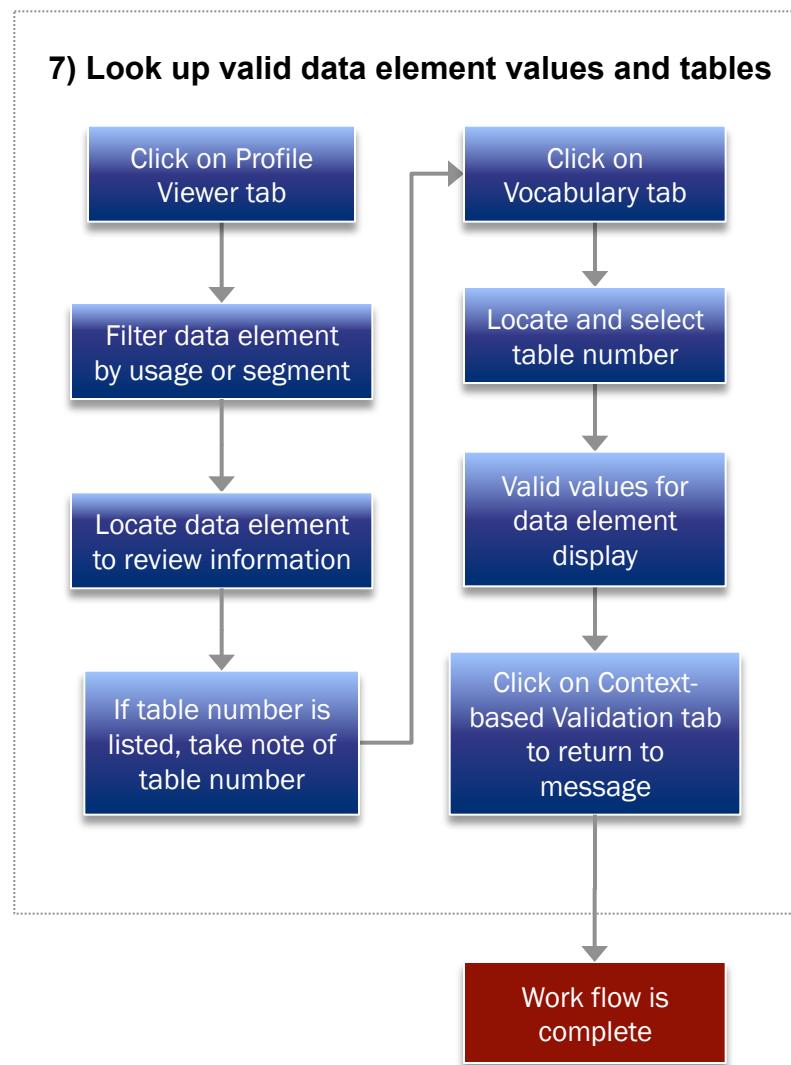


eRx EDI Context-based Testing Work Flow (cont' d)



Next Slide

eRx EDI Context-based Testing Work Flow (cont' d)



1) Select Test Case and Review Test Story

1

Open eRx Validation tool using link: <http://erx-testing.nist.gov> and click on EDI Validation.

2

In the EDI Validation Tool, click on Content-based Validation tab.

3

Click on arrow to expand the Test Scenario and select a Test Case.

4

Review Test Story displayed.

The screenshot shows the eRx Validation tool's interface. At the top, there's a navigation bar with tabs: Home, Context-free Validation, Context-based Validation (which is highlighted in yellow), Profile Viewer, Vocabulary, and Documentation. Below the navigation bar, there are three sub-tabs: Test Case, Validation, and Report. The main content area has a title 'Title: Ta_1.0_1.1'. Underneath the title, there are two tabs: 'Test Story' (which is selected and highlighted in blue) and 'Test Data Specification'. The 'Test Story' tab contains several sections: Description, PreCondition, PostCondition, TestObjectives, and Notes to Testers. The 'Description' section contains a prescription scenario for Hydrochlorothiazide 50 mg tablets. The 'PreCondition' section states that the vendor has pre-configured test prescribers, pharmacies, and patients. The 'PostCondition' section indicates that a SCRIPT 10.6 NEWRX prescription message has been generated. The 'TestObjectives' section aims to confirm correct population of the prescription message. The 'Notes to Testers' section provides instructions for visually comparing medication details.

2) Review Test Data Specification

The screenshot shows the NIST eRx Validation Tool interface. At the top, there is a navigation bar with links: Home, Context-free Validation, Context-based Validation (which is selected), Profile Viewer, Vocabulary, and Documentation. Below the navigation bar, there are tabs for Test Case, Validation, and Report. A sidebar on the left lists 'Test Cases' under '[NEWRX-MU]' with items like Ta_1.0_1.1, Tb_2.0_1.1, Tc_3.0_1.1, etc. A callout box labeled '1' points to the 'Test Data Specification' tab in the main content area. Another callout box labeled '2' points to the detailed data tables. The main content area has a title 'Title: Ta_1.0_1.1'. It contains two tables: 'Prescription Information' and 'Prescriber Information'. The Prescription Information table includes fields for Medication name (Hydrochlorothiazide 50 mg tablet), Directions (Take 1 tablet every day by mouth), Quantity (30), Refills (1), and Substitution Allowed? (Yes). The Prescriber Information table includes fields for First Name (One), Middle Name (Test), Last Name (Presiberone), Clinic Name (Clinic One), Address Line 1 (9000 1ST AVE), and Address Line 2 (STE 100).

1 Click on Test Data Specification tab.

2 Review information provided for data elements of test message.

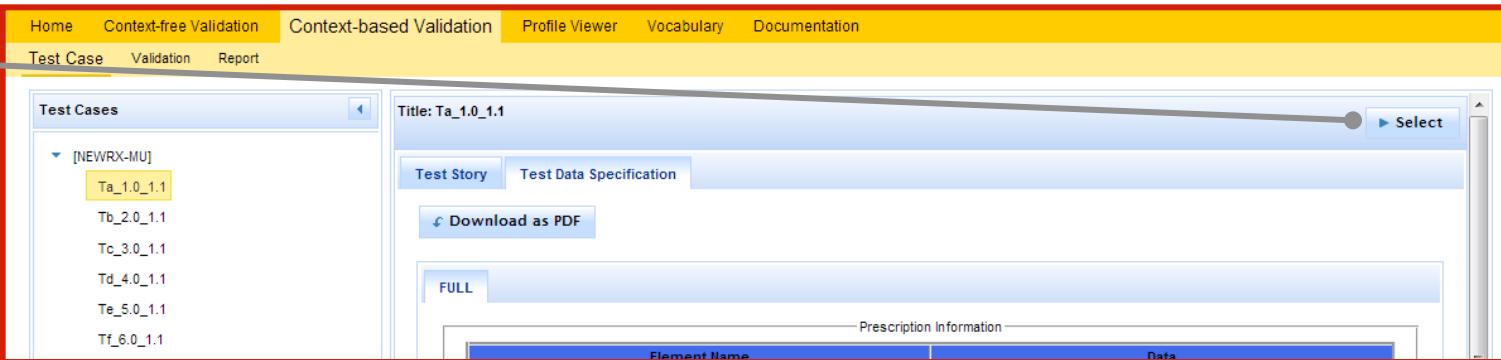
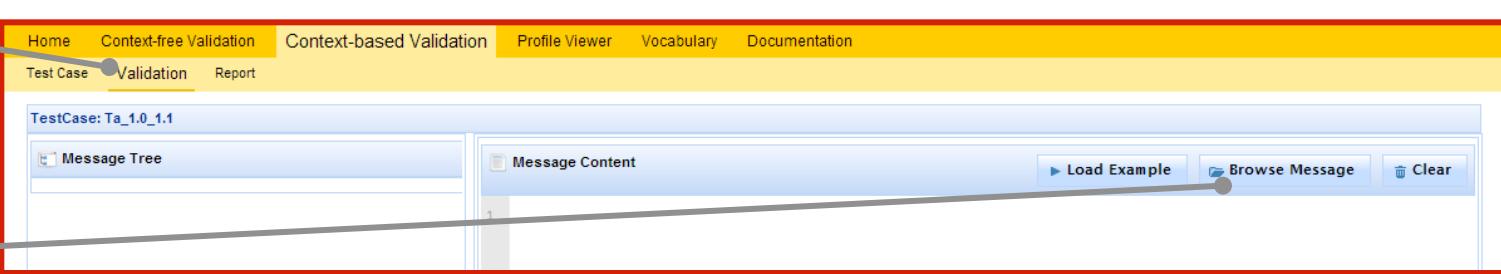
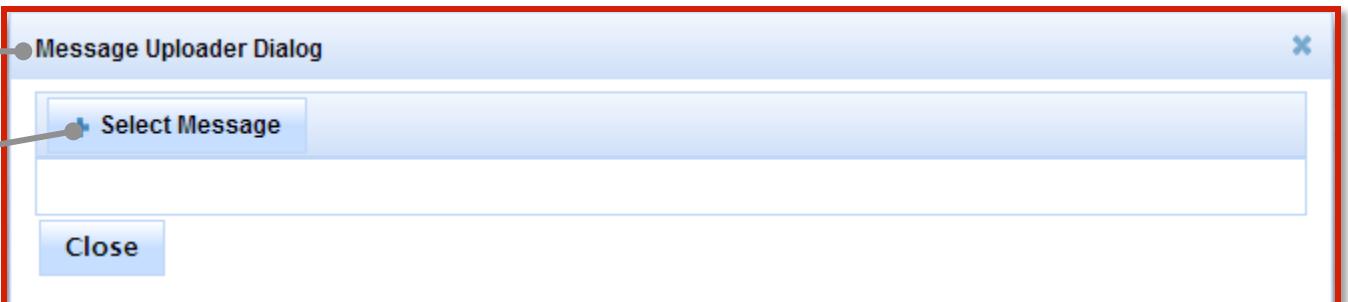
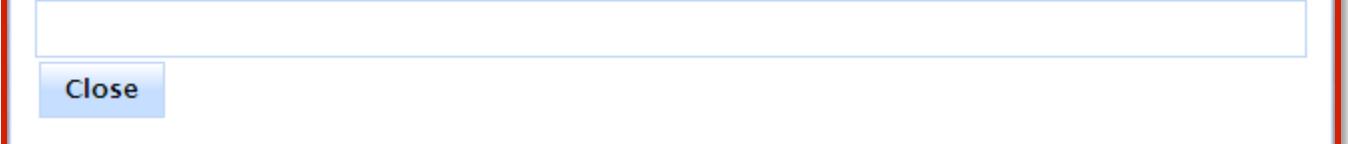
Test Data Specification page

This page specifies the data that are entered (manually for testing) into the EHR and included in the message that is created and submitted from the EHR to the eRx validation tool. The tester shall identify an existing patient record in the EHR or shall create a patient record in the EHR using the data in the Data Sheet associated with the Test Case.

3) Create test message

- 1 Using the EHR technology, create the eRx test message with the test data provided for the selected Test Step (step 2).

4) Load Test Step and import test message

- 1 Click on Select button to load the Test Step.
- 2 Validation page displays.
- 3 Click on Browse Message button.
- 4 Message Uploader Dialog window displays.
- 5 Click on Select Message button.
- 6 Open test message file created in step 3 to upload it.

5) Validate test message and review validation errors

The screenshot shows the NIST Health IT Standards Testing Infrastructure interface. The top navigation bar includes Home, Context-free Validation, Context-based Validation, Profile Viewer, Vocabulary, Documentation, Test Case, Validation (selected), and Report. The main area is titled 'TestCase: Ta_1.0_1.1'. It contains three panels: 'Message Tree' (showing message structure like UNA R [1,1], UIB R [1,1], etc.), 'Message Content' (showing the raw HL7 message text), and 'Message Validation Result' (showing validation errors). A vertical red line on the left indicates the flow of steps 1 through 4.

- 1 Uploaded test message displays.
- 2 If message fails validation, errors will display in Message Validation Result section of page.
- 3 Review error information provided to correct message.
- 4 Click on Location link to highlight the data element causing the error within the Message Tree and Content.

Message Content

```
UNA:+.*'  
UIB+UNOA:0++MESSAGE_ID+++SENDER_ID:C+RECIPIENT_ID:P+1220121012:gt101022,6'  
UIH+SCRIPT:010:006:NEWRX+MSG_ID_NUMBER'  
PVD+PC+AP9010000:DH*1010000002:HPI++PrescriberOne:One:Test++Clinic One+90001 1ST Ave:Washington:DC:20000:AD2  
PVD+P2+0999017:Z@3*201000000:HPI++++Test One Pharmacy+90001 1ST ST:Washington:DC:20000:AD2:1ST FL+202555121  
PTT+1+19600101+PatientOne:One:Test+M+PATIENT_ID:EA+1 Test BLVD:Washington:DC:20000:AD2:APT 1+2025551212-TE'  
DRU+P:Hydrochlorothiazide 50 MG Oral Tab:::::197770:123SCD:Hydrochlorothiazide 50 MG Oral Tabl:ett+:30:38:AC:  
UIT+MSG_ID_NUMBER+Z'  
UIZ++'
```

Message Validation Result

Description	Line	Column	Location
[NEWRX-19] If (PVD-1 is PC or SU or P2) then PVD-9.2 is valued	5	5	PVD[2].1[1]
The value '1220121012' specified in the message is not i n the length range [0 .. 8] specified in the profile.	2	53	UIB[1].8[1].1
The value 'Z@3' specified in the message does not matc h any of the values in the table 'IdentificationCodeValues'	5	16	PVD[2].2[1].2
The value '123SCD' specified in the message is not in the length range [0 .. 3] specified in the profile.	7	54	DRU[1].1[1].9

5) Validate test message and review validation errors (cont' d)

Message Validation Result

Invalid Settings Report

Description	Line	Column	Location
[NEWRX-19] If (PVD-1 is PC or SU or P2) then PVD-9.2 is valued	5	5	PVD[2].1[1]
1012' specified in the message is not i n the length range [0 .. 8] specified in the profile.	2	53	UIB[1].8[1].1
The value 'Z@3' specified in the message does not matc h any of the values in the table 'IdentificationCodeValues'	5	16	PVD[2].2[1].2
The value '123SCD' specified in the message is not in the length range [0 .. 3] specified in the profile.	7	54	DRU[1].1[1].9
Click on page numbers to view additional pages of errors.	7	54	DRU[1].1[1].9
Total number of errors displays.			

1 2 > >>

Errors (10) Affirmatives (5) Warnings (0) Alerts (0)

9 Location link displays table name.

Note: Location link may not be available if the
message element location does not map to a
message element in the message tree.

6) Generate Message Validation Report

The screenshot shows the 'Message Validation Result' interface. At the top right, there are buttons for 'Invalid', 'Settings', and 'Report'. A callout box labeled '1' points to the 'Report' button with the text: 'Click Report button to view Validation Report details.' Below this, a table row highlights a validation error: [NEWRX-19] If (PVD-1 is PC or SU or P2) then PVD-9.2 is valued, located at Line 5, Column 5, with the location PVD[2].1[1]. A callout box labeled '2' points to the 'Report' tab in the navigation bar with the text: 'Message Validation Report may be downloaded as a PDF, XML, Word doc, HTML file.' A callout box labeled '3' points to the printer icon in the toolbar with the text: 'Message Validation Report may be printed.'

Message Validation Result

Description	Line	Column	Location
[NEWRX-19] If (PVD-1 is PC or SU or P2) then PVD-9.2 is valued	5	5	PVD[2].1[1]

Home Context-free Validation Context-based Validation Profile Viewer Vocabulary Documentation

Test Case Validation Report

PDF XML Word HTML Print

Message Validation Report Date: 11 04 2012, 20:41:08.261-05:00

Profile	Name	SCRIPT
	Organization	NCPDP
	Type	SCRIPT\NEWRX\NEWRX
	Profile Version	1.5
	Version	10.6
	File	

Validation Context Name

Message Header	Encoding	
	Id	
	File	/var/lib/tomcat_fred/tomcat_fred_1

Message Content

```
UNA:+./*'
UIB+UNOA:0++MESSAGE_ID+++SENDER_ID:C+RECIPIENT_ID:P+1220121012:gt101022,6
UIH+SCRIPT:010:006:NEWRX+MSG_ID_NUMBER
PVD+PC+AP901000:DH*1010000000:HPI+++PrescriberOne:One:Test++Clinic One+90001 1ST I
PVD+B2+0999017:Z@3*2010000000:HPI++++Test One Pharmacy+90001 1ST ST:Washington:DC
PTT+1+19600101+PatientOne:One:Test+M+PATIENT_ID:EA+1 Test BLVD:Washington:DC:20000
DRU+P:Hydrochlorothiazide 50 MG Oral Tab:::::197770:123SCD:Hydrochlorothiazide 50
```

7) Look up valid data element values and tables

- 1 Click on Profile Viewer tab.
- 2 Data elements may be filtered by Usage.
Select R, RE, C (Only) to view only required, required but may be empty and conditional elements.
Select R, RE, C, O, X (All) to view all data elements, including optional and not supported elements.
- 3 Click on a tab to filter data elements by segment. The Full tab displays data elements of all segments.
- 4 Locate data element using table name from the location link.
- 5 Usage will indicate whether data element is required. The value R indicates it is required.
- 6 Make a note of the table ID.

The screenshot shows the Profile Viewer page with a red border. At the top, there are tabs: Home, Context-free Validation, Context-based Validation, Profile Viewer (which is highlighted), Vocabulary, and Documentation. Below the tabs, there are buttons for Group, Segment, Field, Component, and Subcomponent. A dropdown menu shows 'R,RE,C (Only)' selected. Below this, there are tabs for FULL, UNA, UIB, UIH, REQ, PVD, PTT, DRU, SIG, OBS, COO, UIT, and UIZ. The DRU tab is selected. The main content area displays data elements for the DRU segment. The first row shows 'DRU : Drug Segment for "MedicationPrescribed" element in XML'. The second row shows 'DRU.1 : Drug, Coded'. The third row shows 'DRU.1.1 : Item Description Identification'. The fourth row shows 'DRU.1.2 : Item Description'. The fifth row shows 'DRU.1.3 : Item Number'. The sixth row shows 'DRU.1.4 : Code List Responsibility Agency'. The seventh row shows 'DRU.1.5 : Code List Qualifier'. The eighth row shows 'DRU.1.6 : Free Text'. The ninth row shows 'DRU.1.8 : Reference Number'. The tenth row shows 'DRU.1.9 : Reference Qualifier'. The eleventh row shows 'DRU.1.10 : Item Description'. The twelfth row shows 'DRU.1.11 : Item Description'. The thirteenth row shows 'DRU.1.12 : Item Description'. The fourteenth row shows 'DRU.1.13 : Source Code List'. The fifteenth row shows 'DRU.1.14 : Item Form Code'. Each row contains columns for Location, Usage, Cardinality, Data Type, Length, Table, Predicate, and Conformance Statement. The 'Table' column for DRU.1.14 is highlighted with a red box and labeled 'DrugDBCodeQualifier'. The 'Table' column for DRU.1.13 is highlighted with a red box and labeled 'FormSourceCode'. The 'Table' column for DRU.1.14 is highlighted with a red box and labeled 'FormCode'.

Profile Viewer page

This page allows tester to view data element information including usage, cardinality, data type, length, table, predicate and conformance statements.

7) Look up valid data element values and tables (cont'd)

7

Click on Vocabulary tab.

8

Locate and select table ID.

9

Valid values are listed.

Vocabulary page

This page provides the ability to look up data elements based on value, table name, table ID and description. Search results can provide information to assist in correcting message validation errors such as valid data element values.

10

Click on Context-based Validation tab to return to message.

**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

eRx EDI Context-free Test Scenario Walk Through Tool Demonstration

eRx EDI Context-free Testing Work Flow (Step by Step)

1) Import test message

- Open eRx Validation tool using link: <http://erx-testing.nist.gov> and click on EDI Validation.
- In the EDI Validation Tool, click on Content-free Validation tab.
- Click on Browse Message button to load message into Message Content window.
- Message Uploader Dialog window displays.
- Click on Select Message button.
- Open test message file to upload it.

2) Validate test message and review message validation errors

- Uploaded test message displays.
- If message fails validation, errors will display in Message Validation Result section of page.
- Review error information provided to correct message.
- Click on Location link to highlight the data element causing the error within the Message Tree and Content.
- Description explains why error occurred. Format or table of data element may be provided.
- Column data element is located within message is provided.
- Click on page numbers to view additional pages of errors.
- Total number of errors displays.
- Location link displays table name.

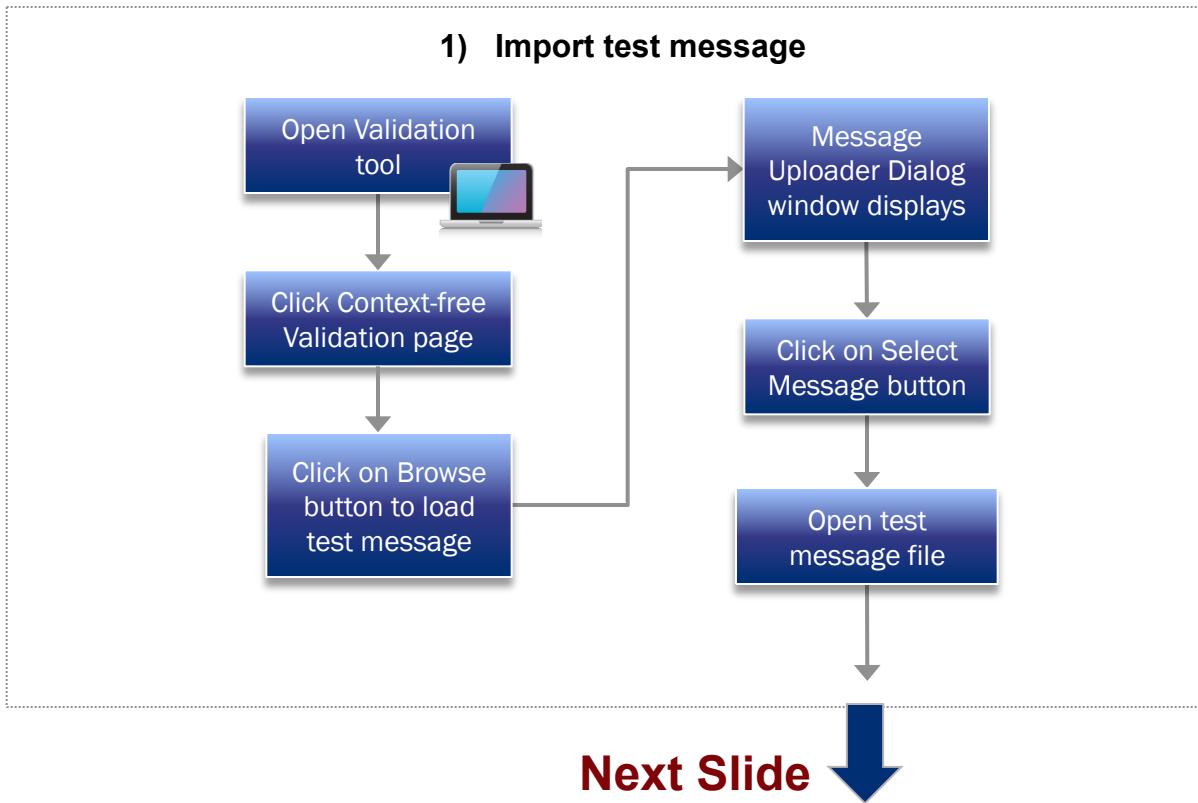
3) Look up valid data element values and tables

- Click on Profile Viewer tab.
- Data elements may be filtered by Usage. Select R, RE, C (Only) to view only required, required but may be empty and conditional elements. Select R, RE, C, O, X (All) to view all data elements, including optional and not supported elements.
- Click on a tab to filter data elements by segment. The Full tab displays data elements of all segments.
- Locate data element using table name from the location link.
- Usage will indicate whether data element is required. The value R indicates it is required.
- Make a note of the table ID.
- Click on Vocabulary tab.
- Locate and select table ID.
- Valid values are listed.
- Click on Context-free Validation tab to return to message.

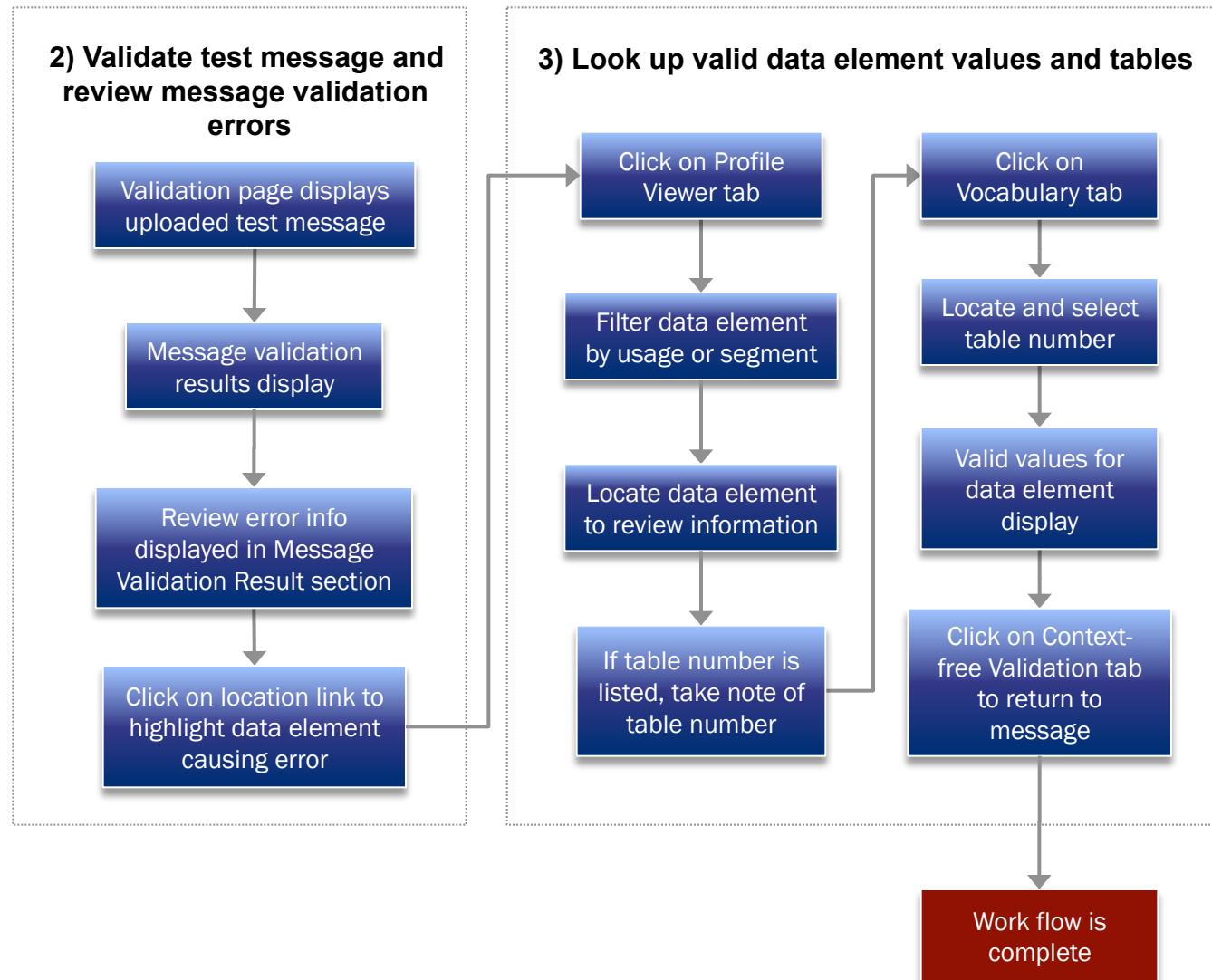
eRx EDI Context-free Testing Work Flow

In the next few slides, this test scenario will walk through the steps needed to:

- 1) Import test message
- 2) Validate test message and review message validation errors
- 3) Look up valid data element values and tables



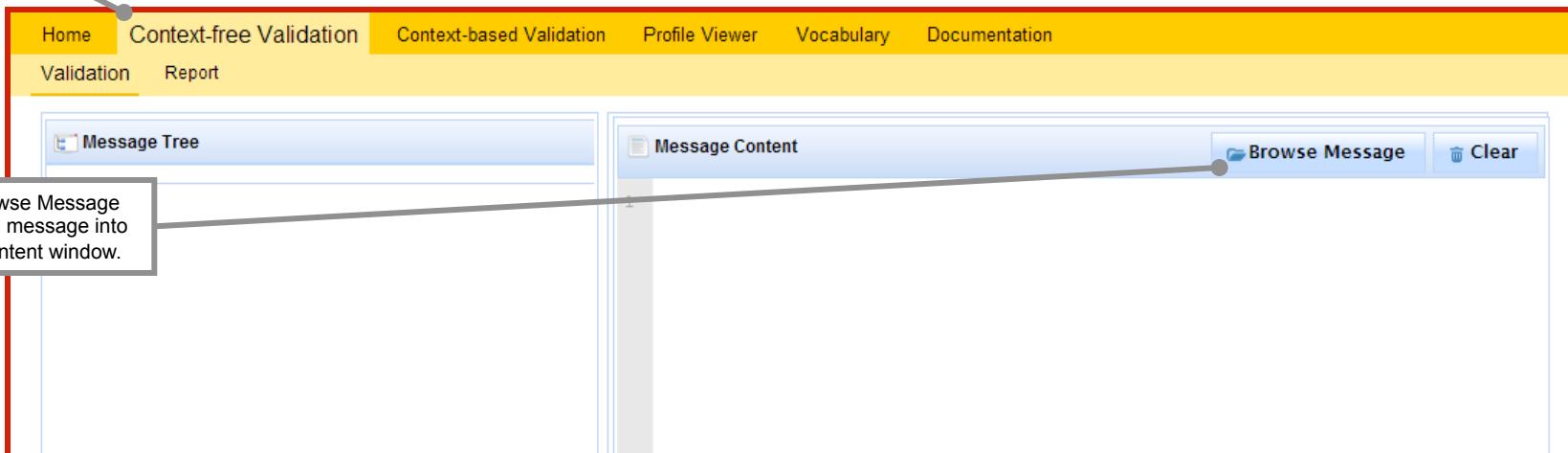
eRx EDI Context-free Testing Work Flow (cont'd)



1) Import test message

1 Open eRx Validation tool using link: <http://erx-testing.nist.gov> and click on EDI Validation.

2 In the EDI Validation Tool, click on Context-free Validation tab.

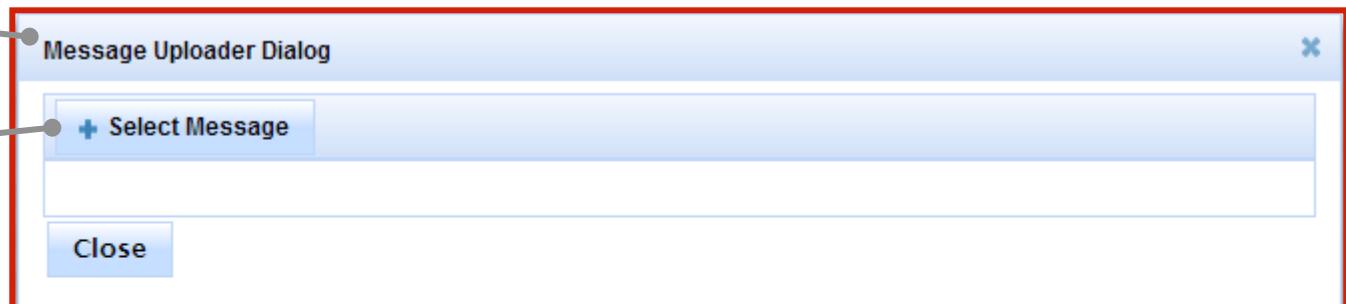


3 Click on Browse Message button to load message into Message Content window.

4 Message Uploader Dialog window displays.

5 Click on Select Message button.

6 Open test message file to upload it.



Context-free Validation page

This page validates any eRx message in EDI format. It is disassociated from a test script, test case, or specific content. Testing will include the technical requirements and content-specific requirements specified in the selected profile.

2) Validate test message and review message validation errors

The screenshot shows the NIST Health IT Standards Testing Infrastructure interface. The top navigation bar includes Home, Context-free Validation (selected), Context-based Validation, Profile Viewer, Vocabulary, and Documentation. Below the navigation is a sub-menu with Validation (selected) and Report.

The main area is divided into three sections:

- Message Tree:** A tree view of the message structure with nodes like UNA R [1,1], UIB R [1,1], UIH R [1,1], PVD R [2,*], PVD R [2,1], PTT R [1,1], and DRU R [1,1].
- Message Content:** Displays the raw HL7 message text. A callout box labeled "1" points to this section with the text "Uploaded test message displays."
- Message Validation Result:** A table showing validation errors. A callout box labeled "2" points to this section with the text "If message fails validation, errors will display in Message Validation Result section of page." Another callout box labeled "3" points to the first error row with the text "Review error information provided to correct message." A final callout box labeled "4" points to the "Location" column of the first error row with the text "Click on Location link to highlight the data element causing the error within the Message Tree and Content."

Message Content:

```
1 UNA:+.*'  
2 UIB+UNOA:0+MESSAGE_ID+++SENDER_ID:C+RECIPIENT_ID:P+1220121012:gt101022,6'  
3 UIH+SCRIPT:010:006:NEWRX+MSG_ID_NUMBER'  
4 PVD+PC+AP9010000:DH*1010000002:HPI+++PrescriberOne:One:Test++Clinic One+90001 1ST Ave:Washington:DC:20000:AD2  
5 PVD+P2+0999017:Z@3*2010000000:HPI++++Test One Pharmacy+90001 1ST ST:Washington:DC:20000:AD2:1ST FL+202555121  
6 PTT+1+19600101+PatientOne:One:Test+M+PATIENT_ID:EA+1 Test BLVD:Washington:DC:20000:AD2:APT 1+2025551212:TE'  
7 DRU+P:Hydrochlorothiazide 50 MG Oral Tab:::::197770:123SCD:Hydrochlorothiazide 50 MG Oral Tabl:et+:30:38:AC:  
8 UIT+MSG_ID_NUMBER+Z'  
9 UIZ++'
```

Message Validation Result:

Description	Line	Column	Location
[NEWRX-19] If (PVD-1 is PC or SU or P2) then PVD-9.2 is valued	5	5	PVD[2].1[1]
The value '1220121012' specified in the message is not in the length range [0 .. 8] specified in the profile.	2	53	UIB[1].8[1].1
The value 'Z@3' specified in the message does not match any of the values in the table 'IdentificationCodeValues'	5	16	PVD[2].2[1].2
The value '123SCD' specified in the message is not in the length range [0 .. 31] specified in the profile	7	54	DRU[1].1[1].9

2) Validate test message and review message validation errors (cont'd)

Message Validation Result

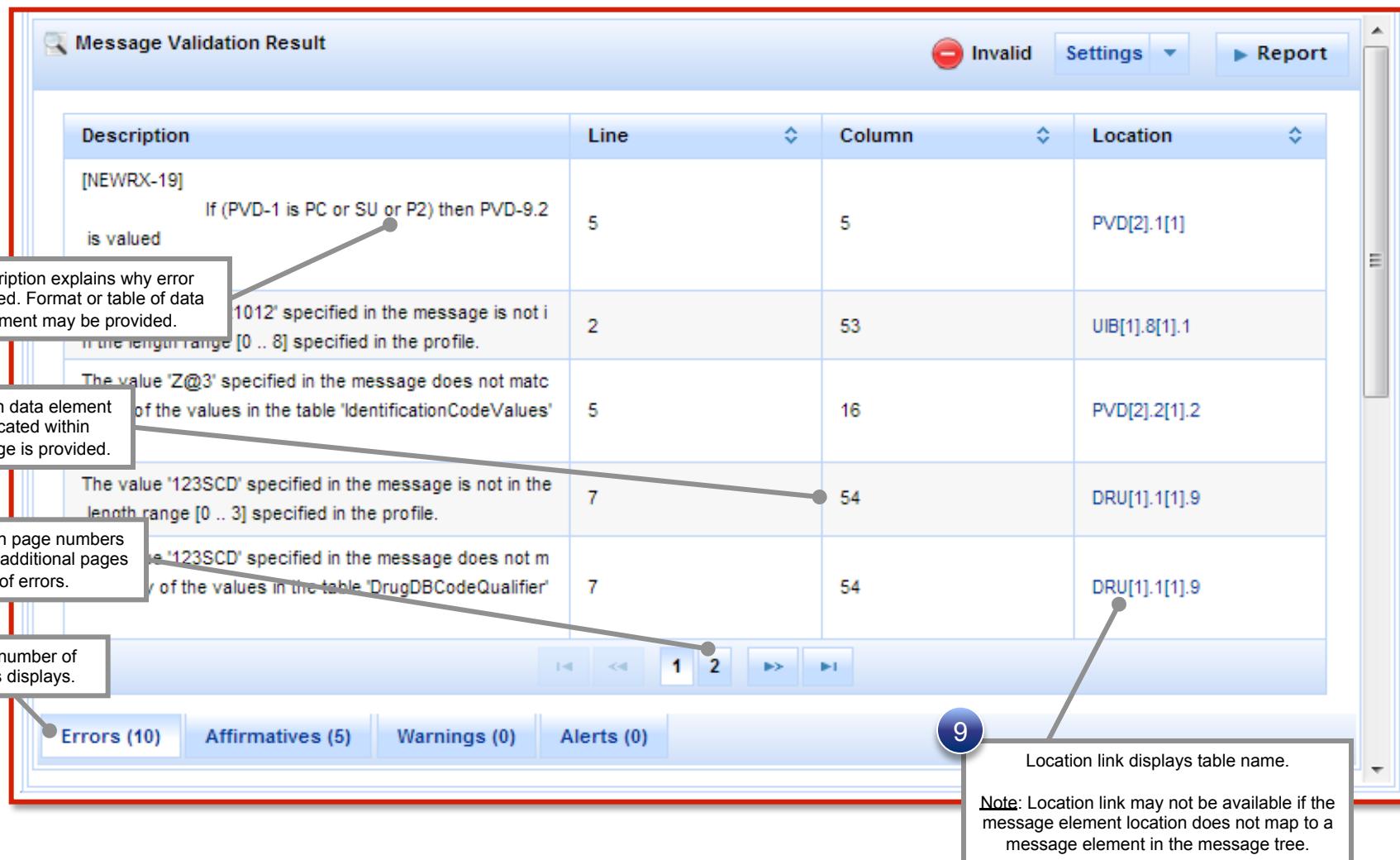
Invalid Settings Report

Description	Line	Column	Location
[NEWRX-19] is valued <i>If (PVD-1 is PC or SU or P2) then PVD-9.2</i>	5	5	PVD[2].1[1]
<i>1012' specified in the message is not in the length range [0 .. 8] specified in the profile.</i>	2	53	UIB[1].8[1].1
<i>The value 'Z@3' specified in the message does not match one of the values in the table 'IdentificationCodeValues'</i> Column data element is located within message is provided.	5	16	PVD[2].2[1].2
<i>The value '123SCD' specified in the message is not in the length range [0 .. 3] specified in the profile.</i>	7	54	DRU[1].1[1].9
<i>The value '123SCD' specified in the message does not match one of the values in the table 'DrugDBCodeQualifier'</i> Click on page numbers to view additional pages of errors.	7	54	DRU[1].1[1].9
Total number of errors displays.			

1 2 > >>

Errors (10) Affirmatives (5) Warnings (0) Alerts (0)

9 Location link displays table name.
Note: Location link may not be available if the message element location does not map to a message element in the message tree.



3) Look up valid data element values and tables

The screenshot shows the NIST Health IT Standards Testing Infrastructure's Profile Viewer page. The top navigation bar includes Home, Context-free Validation, Context-based Validation, Profile Viewer (selected), Vocabulary, and Documentation. Below the navigation is a toolbar with Group, Segment, Field, Component, and Subcomponent buttons. A filter dropdown shows 'R,RE,C (Only)' selected. The main content area displays data elements for the DRU segment, filtered by Usage. The table has columns for Location, Usage, Cardinality, Data Type, Length, Table, Predicate, and Conformance Statement. The DRU row shows 'DRU : Drug Segment for "MedicationPrescribed" element in XML'. The DRU.1 row shows 'DRU.1 : Drug, Coded'. The DRU.1.1 row shows 'DRU.1.1 : Item Description Identification'. The DRU.1.2 row shows 'DRU.1.2 : Item Description'. The DRU.1.3 row shows 'DRU.1.3 : Item Number'. The DRU.1.4 row shows 'DRU.1.4 : Code List Responsibility Agency'. The DRU.1.5 row shows 'DRU.1.5 : Code List Qualifier'. The DRU.1.6 row shows 'DRU.1.6 : Free Text'. The DRU.1.8 row shows 'DRU.1.8 : Reference Number'. The DRU.1.9 row shows 'DRU.1.9 : Reference Qualifier'. The DRU.1.10 row shows 'DRU.1.10 : Item Description'. The DRU.1.11 row shows 'DRU.1.11 : Item Description'. The DRU.1.12 row shows 'DRU.1.12 : Item Description'. The DRU.1.13 row shows 'DRU.1.13 : Source Code List'. The DRU.1.14 row shows 'DRU.1.14 : Item Form Code'. The 'Table' column for DRU.1.13 points to 'DrugDBCodeQualifier', for DRU.1.14 to 'FormSourceCode', and for DRU.1.14 to 'FormCode'. The 'Usage' column indicates required elements (R). The 'Cardinality' column shows ranges like [1,1]. The 'Data Type' column includes AN and S_DRUG. The 'Length' column is mostly blank or shows ranges like [1,1]. The 'Predicate' and 'Conformance Statement' columns are empty.

- 1 Click on Profile Viewer tab.
- 2 Data elements may be filtered by Usage.
Select R, RE, C (Only) to view only required, required but may be empty and conditional elements.
Select R, RE, C, O, X (All) to view all data elements, including optional and not supported elements.
- 3 Click on a tab to filter data elements by segment.
The Full tab displays data elements of all segments.
- 4 Locate data element using table name from the location link.
- 5 Usage will indicate whether data element is required. The value R indicates it is required.
- 6 Make a note of the table ID.

Profile Viewer page

This page allows tester to view data element information including usage, cardinality, data type, length, table, predicate and conformance statements.

3) Look up valid data element values and tables (cont'd)

7

Click on Vocabulary tab.

8

Locate and select table ID.

9

Valid values are listed.

Vocabulary page

This page provides the ability to look up data elements based on value, table name, table ID and description. Search results can provide information to assist in correcting message validation errors such as valid data element values.

10

Click on Context-free Validation tab to return to message.

**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

eRx XML Context-based Test Scenario Walk Through Tool Demonstration

eRx XML Context-based Testing Work Flow (Step by Step)

1) Select Test Case and Review Test Story

- Open eRx Validation tool using link: <http://erx-testing.nist.gov> and click on XML Validation.
- In the XML Validation Tool, click on Content-based Validation tab.
- Click on arrow to expand the Test Scenario and select a Test Case.
- Review Test Story displayed.

2) Review Test Data Specification

- Click on Test Data Specification tab.
- Review information provided for data elements of test message.

3) Create test message

- Using the EHR technology, create the eRx test message with the test data provided for the selected Test Step (step 2).

4) Load Test Step and import test message

- Click on Select button to load the Test Step.
- Validation page displays.
- Click on Browse Message button.
- Message Uploader Dialog window displays.
- Click on Select Message button.
- Open test message file created in step 3 to upload it.

eRx XML Context-based Testing Work Flow (Step by Step – cont'd)

5) Validate test message and review validation errors message

- Uploaded test message displays.
- If message fails validation, errors will display in Message Validation Result section of page.
- Review error information provided to correct message.
- Click on Location link to highlight the data element causing the error within the Message Tree and Content.
- Description explains why error occurred. Format or table of data element may be provided.
- Errors beginning with “ERROR” or “NOTE” indicate schematron errors. Details may be found in the Profile Viewer - Extra Rules page. Errors beginning with “The value(s)” indicate Context-based validation errors related to Test Cases. Errors beginning with “cvc-pattern-valid:” indicate schema validation errors. Details may be found in the Profile Viewer – Profile page.
- Column data element is located within message is provided.
- Click on page numbers to view additional pages of errors.
- Total number of errors displays.

6) Generate Message Validation Report

- Click Report button to view Validation Report details.
- Message Validation Report may be downloaded as a PDF, XML, Word doc, HTML file.
- Message Validation Report may be printed.

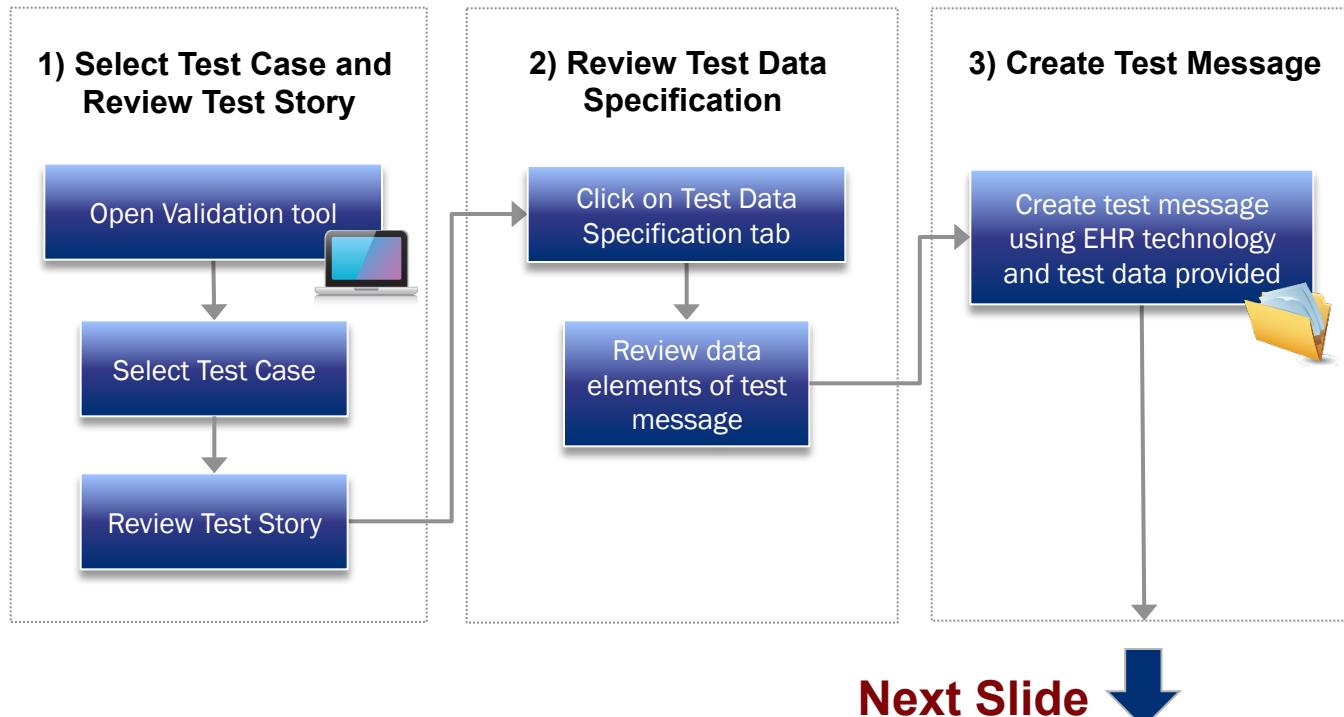
7) Look up schematron rule details

- Click on Profile Viewer tab.
- Click on Extra Rules link.
- Review details of rules.
- Pattern Name lists the schematron rule type.
- Test Condition lists the rule being tested.
- Detail lists the error message displayed if rule is not met.
- Click on Context-based Validation tab to return to message.

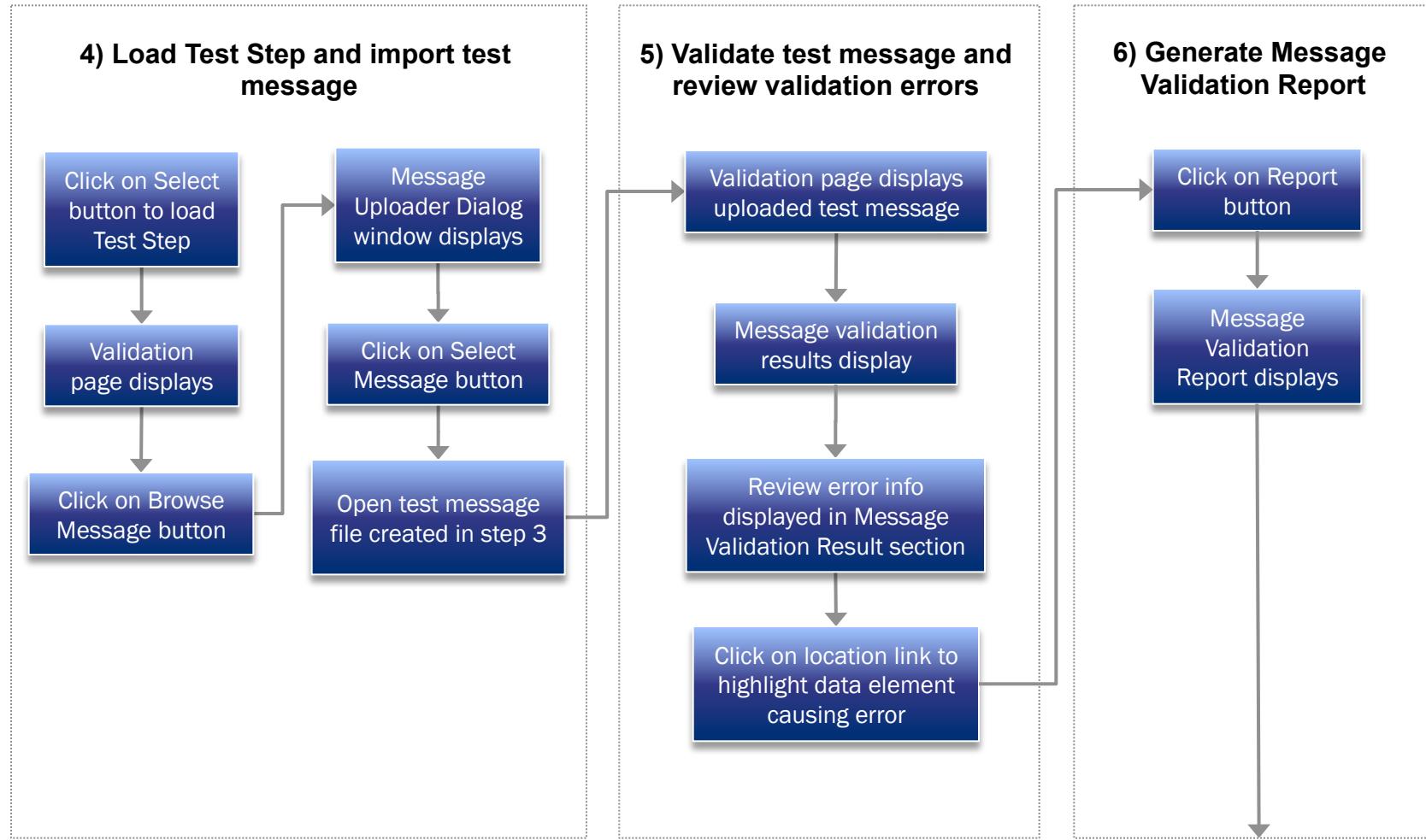
eRx XML Context-based Testing Work Flow

In the next few slides, this test scenario will walk through the steps needed to:

- 1) Select Test Case and Review Test Story
- 2) Review Test Data Specification
- 3) Create Test Message
- 4) Load Test Step and import test message
- 5) Validate test message and review validation errors
- 6) Generate Message Validation Report
- 7) Look up schematron rule details

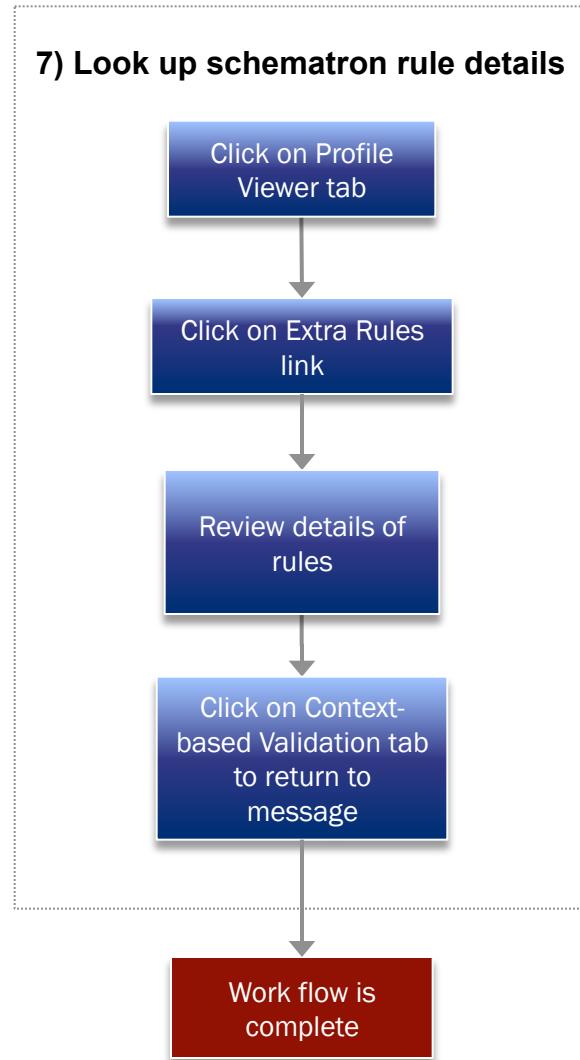


eRx XML Context-based Testing Work Flow (cont' d)



Next Slide

eRx XML Context-based Testing Work Flow (cont' d)



1) Select Test Case and Review Test Story

1

Open eRx Validation tool using link: <http://erx-testing.nist.gov> and click on XML Validation.

2

In the XML Validation Tool, click on Content-based Validation tab.

3

Click on arrow to expand the Test Scenario and select a Test Case.

4

Review Test Story displayed.

The screenshot shows the eRx Validation tool's interface. At the top, there is a navigation bar with tabs: Home, Context-free Validation, Context-based Validation (which is highlighted in yellow), Profile Viewer, and Documentation. Below the navigation bar, there are three sub-tabs: Test Case, Validation, and Report. The main content area has a title "Title: Ta_1.0_1.1". There are two tabs in this section: "Test Story" (which is selected and highlighted in blue) and "Test Data Specification". The "Test Story" tab contains several sections: Description, PreCondition, PostCondition, TestObjectives, and Notes to Testers. The "Description" section contains the following text:
A prescription for Hydrochlorothiazide 50 mg tablets is written for patient, One Test Patientone by their physician, One Test Prescriberone. It is transmitted to the Test One Pharmacy to be filled.
The "PreCondition" section states: Vendor has pre-configured the test prescribers, pharmacies, and patients, and has used one of each in this test.
The "PostCondition" section states: SCRIPT 10.6 NEWRX prescription message has been generated by the test system.
The "TestObjectives" section states: Confirm correct population of the SCRIPT 10.6 NEWRX prescription message.
The "Notes to Testers" section contains two lines of text: Visually compare /Message/Body/NewRx/MedicationPrescribed/DrugDescription to the RxNorm name and synonyms. Visually compare /Message/Body/NewRx/MedicationPrescribed/Directions to the directions in the test description.

2) Review Test Data Specification

The screenshot shows a software interface for reviewing test data specifications. At the top, there's a navigation bar with links like Home, Context-free Validation, Context-based Validation, Profile Viewer, and Documentation. Below that is a sub-navigation bar with Test Case, Validation, and Report. A sidebar on the left lists various test cases under a section titled [NEWRXMU], with Ta_1.0_1.1 highlighted. The main content area has a title 'Title: Ta_1.0_1.1' and tabs for 'Test Story' and 'Test Data Specification'. The 'Test Data Specification' tab is selected. It includes a 'Download as PDF' button and a 'Full' view. The 'Prescription Information' table contains the following data:

Element Name	Data
Medication name	Hydrochlorothiazide 50 mg tablet
Directions	Take 1 tablet every day by mouth
Quantity	30
Refills	1
Substitution Allowed?	Yes

The 'Prescriber Information' table contains the following data:

Element Name	Data
First Name	One
Middle Name	Test
Last Name	Prescriberone
Clinic Name	Clinic One
Address Line 1	90001 1ST AVE
Address Line 2	STE.100

Test Data Specification page

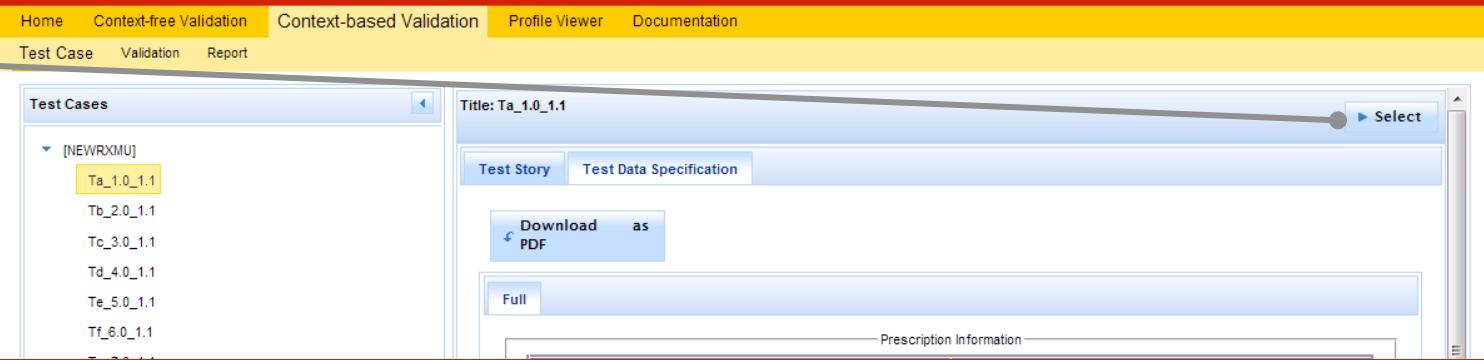
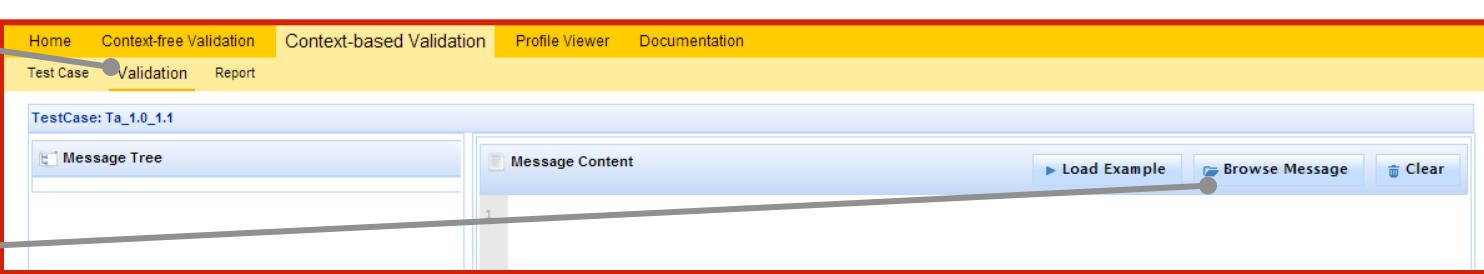
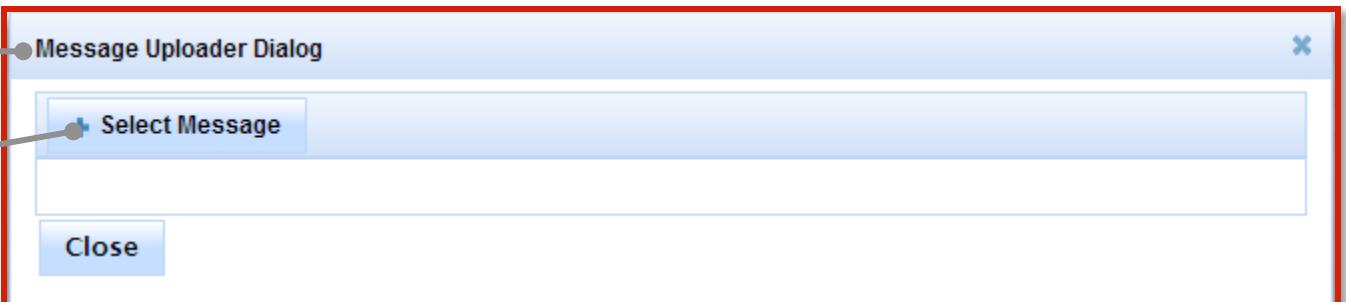
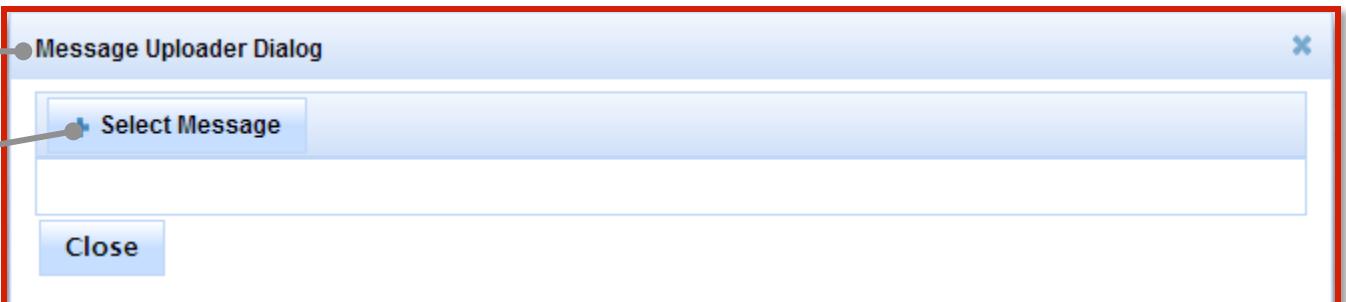
This page specifies the data that are entered (manually for testing) into the EHR and included in the message that is created and submitted from the EHR to the eRx validation tool. The tester shall identify an existing patient record in the EHR or shall create a patient record in the EHR using the data in the Data Sheet associated with the Test Case.

- 1 Click on Test Data Specification tab.
- 2 Review information provided for data elements of test message.

3) Create test message

- 1 Using the EHR technology, create the eRx test message with the test data provided for the selected Test Step (step 2).

4) Load Test Step and import test message

- 1 Click on Select button to load the Test Step.
- 2 Validation page displays.
- 3 Click on Browse Message button.
- 4 Message Uploader Dialog window displays.
- 5 Click on Select Message button.
- 6 Open test message file created in step 3 to upload it.

5) Validate test message and review validation errors

The screenshot shows the NIST Health IT Standards Testing Infrastructure interface. The top navigation bar includes Home, Context-free Validation, Context-based Validation, Profile Viewer, and Documentation. Below this, a secondary navigation bar shows Test Case, Validation (which is selected), and Report.

The main content area is titled "TestCase: Ta_1.0_1.1". It contains three panels:

- Message Tree:** A tree view of the XML message structure. Nodes include Message, Header (To, From, MessageID, SentTime), Body, and security. A callout box labeled "1" points to the "Message Tree" panel with the text "Uploaded test message displays."
- Message Content:** Displays the XML code of the message. A callout box labeled "2" points to this panel with the text "If message fails validation, errors will display in Message Validation Result section of page."
- Message Validation Result:** A table showing validation errors. The table has columns for Description, Line, Column, and Location.

Description	Line	Column	Location
ERROR: If /MedicationPrescribe d/Substitutions is present, its va lue should be 0 or 1 or 7 or 8.	100	35	/Message/Body/NewRx/MedicationPrescribed
The value(s) '9' at the given loc ation in the message does not match one of the expected valu e '0'. The value of /Message/Bo dy/NewRx/MedicationPrescribe d/Substitutions shall be set to '0'	125	17	/Message/Body/NewRx/MedicationPrescribed/Substitutions

A callout box labeled "3" points to the first error row with the text "Review error information provided to correct message." Another callout box labeled "4" points to the second error row with the text "Click on Location link to highlight the data element causing the error within the Message Tree and Content."

5) Validate test message and review validation errors (cont' d)

5 Description explains why error occurred. Format or table of data element may be provided.

6 Errors beginning with "ERROR" or "NOTE" indicate schematron errors. Details may be found in the Profile Viewer - Extra Rules page.
Errors beginning with "The value(s)" indicate Context-based validation errors related to Test Cases.
Errors beginning with "cvc-pattern-valid:" indicate schema validation errors. Details may be found in the Profile Viewer – Profile page.

7 Column data element is located within message is provided.

8 Click on page numbers to view additional pages of errors.

9 Total number of errors displays.

Description	Line	Column	Location
ERROR: If /MedicationPrescribed/Substitutions is present, its value should be 0 or 1 or 7 or 8.	100	35	/Message/Body/NewRx/MedicationPrescribed
The value(s) '9' at the given location in the message does not match one of the expected value '0'. The value of /Message/Body/NewRx/MedicationPrescribed/Substitutions shall be set to '0'	125	17	/Message/Body/NewRx/MedicationPrescribed/Substitutions
cvc-pattern-valid: Value '9' is not facet-valid with respect to pattern '0 1 2 3 4 5 7 8' for type '#A nonType_Substitutions'.	125	49	/Message/Body/NewRx/MedicationPrescribed/Substitutions
cvc-type.3.1.3: The value '9' of element 'Substitutions' is not valid.	125	49	/Message/Body/NewRx/MedicationPrescribed/Substitutions
The value(s) '0' at the given location in the message does not match one of the expected value 'M'. The value of /Message/Body/NewRx/Patient/Gender shall be set to 'M'	82	17	/Message/Body/NewRx/Patient/Gender

Errors (15) Affirmatives (0) Warnings (0) Alerts (0)

6) Generate Message Validation Report

The screenshot shows the 'Message Validation Result' interface. At the top, there's a toolbar with 'Invalid', 'Settings', and a 'Report' button. A red box highlights the 'Report' button. Below it is a table with columns 'Description', 'Line', 'Column', and 'Location'. An error message is listed: 'ERROR: If /MedicationPrescribe d/Substitutions is present, its va lue should be 0 or 1 or 7 or 8.' The 'Line' is 100 and 'Column' is 35, located at '/Message/Body/NewRx/MedicationPrescribed'. Below this is a navigation bar with tabs: Home, Context-free Validation, Context-based Validation, Profile Viewer, Documentation, Test Case, Validation, and Report. The 'Report' tab is selected. A yellow bar above the tabs has icons for PDF, XML, Word, and HTML. The main area displays the 'Message Validation Report' with a date stamp of '11 04 2012, 22:17:21.004-05:00'. It includes sections for 'Validation Context Name', 'Message Header' (with Encoding, Id, and File fields), and 'Message Content' (showing XML code). At the bottom is a 'Summary' section with 'Errors' and a page number '11'.

1 Click Report button to view Validation Report details.

2 Message Validation Report may be downloaded as a PDF, XML, Word doc, HTML file.

3 Message Validation Report may be printed.

7) Look up schematron rule details

The screenshot shows the 'Profile Viewer - Extra Rules' page. The top navigation bar includes Home, Context-free Validation, Context-based Validation, Profile Viewer (which is selected), and Documentation. Below this is a sub-navigation bar with Profile and Extra Rules. The main content area displays a table of rules:

Pattern Name	Id	Rule Context	Test Condition	Detail
Pattern: NEWRX_UIH-Errors	NEWRX_UIH-Errors	script:Message	@version='010'	ERROR: The Message/@version shall contain the value 010. See 170.314 (b)(3) Electronic Prescribing.
Pattern: NEWRX_UIB-Errors	NEWRX_UIB-Errors	script:Message/script:Header/script:From	@Qualifer='D' or @Qualifer='C'	ERROR: The Message/Header/From@Qualifer shall contain value D or C. See 170.314 (b)(3) Electronic Prescribing.
Pattern: NEWRX_UIB-Notes	NEWRX_UIB-Notes	script:Message/script:Header	@Qualifer='P'	ERROR: The Message/Header/To@Qualifer shall contain the value P. See 170.314 (b)(3) Electronic Prescribing.
				Related Number (b)(3) an See

Annotations with numbered callouts point to specific parts of the interface:

- 1 Click on Profile Viewer tab.
- 2 Click on Extra Rules link.
- 3 Review details of rules.
- 4 Pattern Name lists the schematron rule type.
- 5 Test Condition lists the rule being tested.
- 6 Detail lists the error message displayed if rule is not met.
- 7 Click on Context-based Validation tab to return to message.

Profile Viewer – Extra Rules page

This page allows tester to view details of schematron rules, including pattern name, Id, rule context and test condition.

**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

eRx XML Context-free Test Scenario Walk Through Tool Demonstration

eRx XML Context-free Testing Work Flow (Step by Step)

1) Import test message

- Open eRx Validation tool using link: <http://erx-testing.nist.gov> and click on XML Validation.
- In the XML Validation Tool, click on Content-free Validation tab.
- Click on Browse Message button to load message into Message Content window.
- Message Uploader Dialog window displays.
- Click on Select Message button.
- Open test message file to upload it.

2) Validate test message and review message validation errors

- Uploaded test message displays.
- If message fails validation, errors will display in Message Validation Result section of page.
- Review error information provided to correct message.
- Click on Location link to highlight the data element causing the error within the Message Tree and Content.
- Description explains why error occurred. Format or table of data element may be provided.
- Errors beginning with “ERROR” or “NOTE” indicate schematron errors. Details may be found in the Profile Viewer - Extra Rules page. Errors beginning with “cvc-pattern-valid:” indicate schema validation errors. Details may be found in the Profile Viewer – Profile page.
- Column data element is located within message is provided.
- Click on page numbers to view additional pages of errors.
- Total number of errors displays.

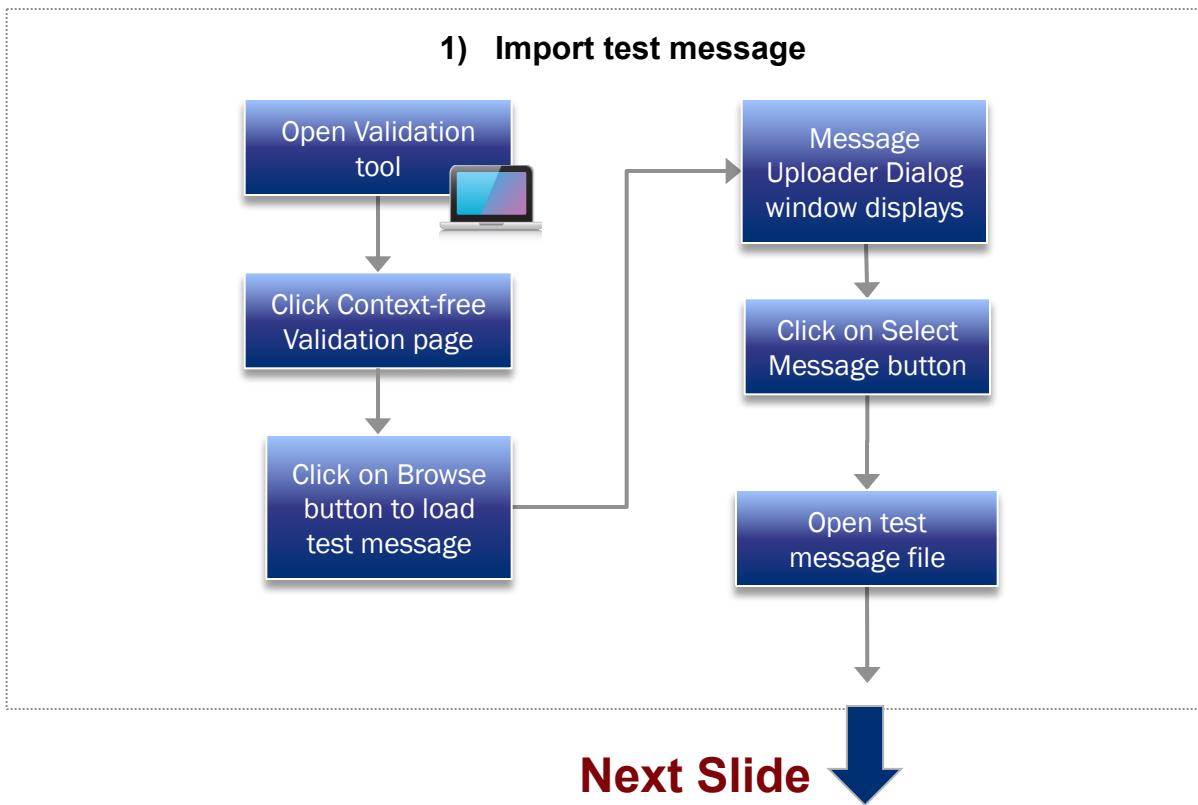
3) Look up schematron rule details

- Click on Profile Viewer tab.
- Click on Extra Rules link.
- Review details of rules.
- Pattern Name lists the schematron rule type.
- Test Condition lists the rule being tested.
- Detail lists the error message displayed if rule is not met.
- Click on Context-free Validation tab to return to message.

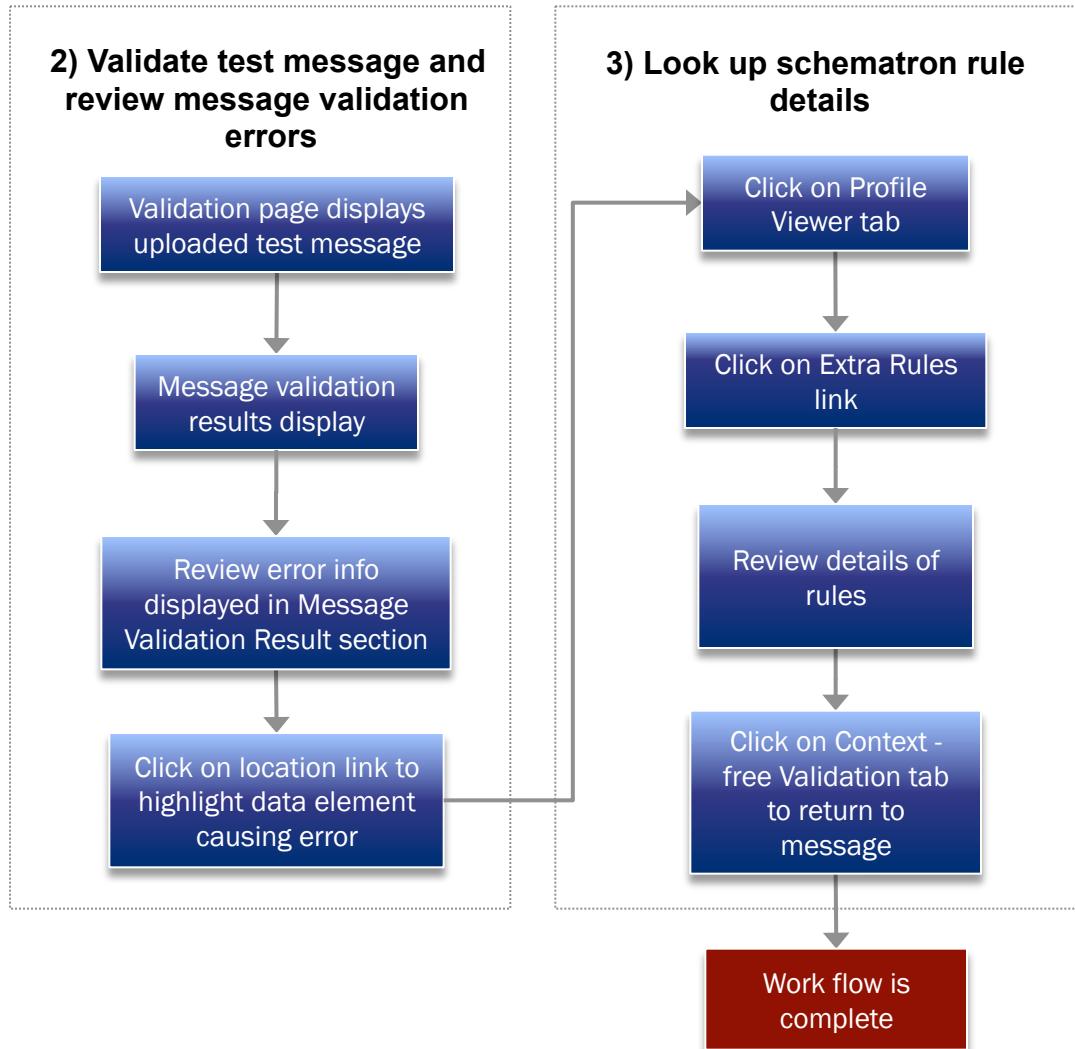
eRx XML Context-free Testing Work Flow

In the next few slides, this test scenario will walk through the steps needed to:

- 1) Import test message
- 2) Validate test message and review message validation errors
- 3) Look up schematron rule details

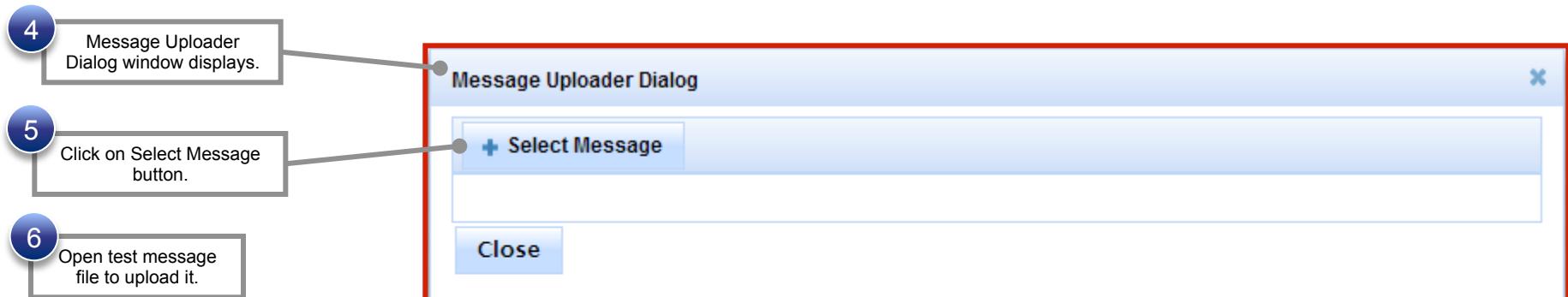
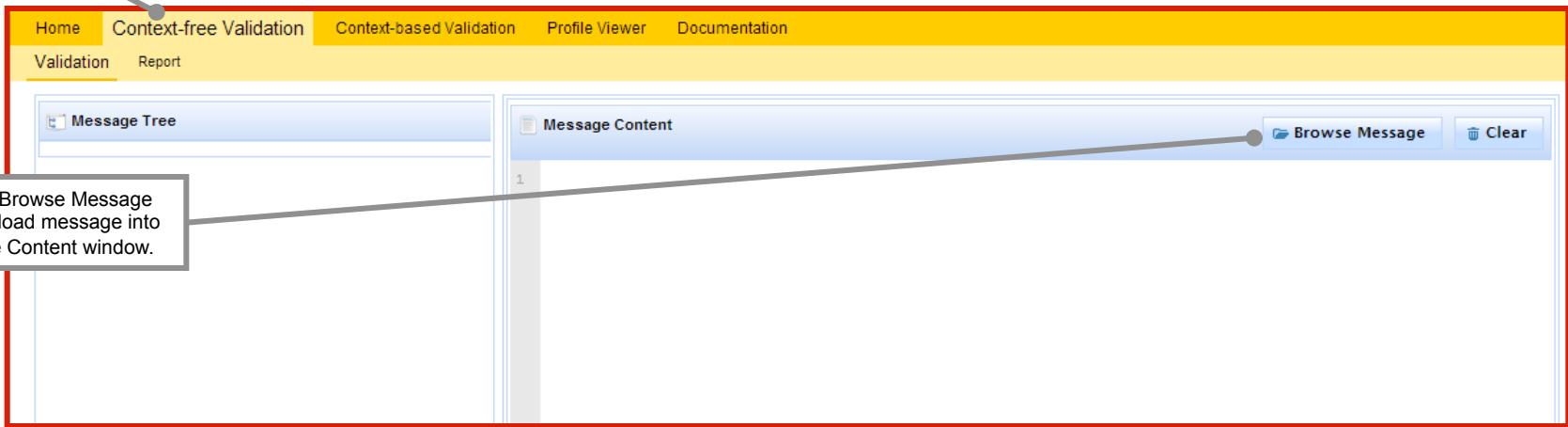


eRx XML Context-free Testing Work Flow (cont'd)



1) Import test message

- 1 Open eRx Validation tool using link: <http://erx-testing.nist.gov> and click on XML Validation.
- 2 In the XML Validation Tool, click on Context-free Validation tab.



Context-free Validation page

This page validates any eRx message in XML format. It is disassociated from a test script, test case, or specific content. Testing will include the technical requirements and content-specific requirements specified in the selected profile.

2) Validate test message and review message validation errors

The screenshot shows the NCPDP Validation tool interface. At the top, there is a navigation bar with links: Home, Context-free Validation, Context-based Validation, Profile Viewer, Documentation, Validation, and Report. The 'Validation' link is highlighted.

The main area is divided into three sections:

- Message Tree:** A tree view showing a single node labeled "Message".
- Message Content:** A text editor displaying an XML message. The XML starts with `<?xml version="1.0" encoding="utf-8"?>` and includes details about a prescription scenario and header information.
- Message Validation Result:** A table showing validation errors. The first error is: "ERROR: If /MedicationPrescribe/d/Substitutions is present, its value should be 0 or 1 or 7 or 8." It points to line 100, column 35, with the location "/Message/Body/NewRx/MedicationPrescribed". The second error is: "cvc-pattern-valid: Value '9' is not facet-valid with respect to pattern '[0|1|2|3|4|5|7|8]' for type '#A nonType_Substitutions'." It points to line 125, column 49, with the location "/Message/Body/NewRx/MedicationPrescribed/Substitutions".

Annotations numbered 1 through 4 are overlaid on the interface:

- 1 Uploaded test message displays.
- 2 If message fails validation, errors will display in Message Validation Result section of page.
- 3 Review error information provided to correct message.
- 4 Click on Location link to highlight the data element causing the error within the Message Tree and Content.

2) Validate test message and review message validation errors (cont'd)

5 Description explains why error occurred. Format or table of data element may be provided.

6 Errors beginning with "ERROR" or "NOTE" indicate schematron errors. Details may be found in the Profile Viewer - Extra Rules page.
Errors beginning with "cvc-pattern-valid:" indicate schema validation errors. Details may be found in the Profile Viewer – Profile page.

7 Column data element is located within message is provided.

8 Click on page numbers to view additional pages of errors.

9 Total number of errors displays.

Description	Line	Column	Location
ERROR: If /MedicationPrescribed/Substitutions is present, its value should be 0 or 1 or 7 or 8.	100	35	/Message/Body/NewRx/MedicationPrescribed
cvc-pattern-valid: Value '9' is not facet-valid with respect to pattern '0 1 2 3 4 5 7 8' for type '#A nonType_Substitutions'.	125	49	/Message/Body/NewRx/MedicationPrescribed/Substitutions
cvc-type.3.1.3: The value '9' of element 'Substitutions' is not valid.	125	49	/Message/Body/NewRx/MedicationPrescribed/Substitutions
cvc-pattern-valid: Value '0' is not facet-valid with respect to pattern 'M F U' for type 'GenderType'.	82	35	/Message/Body/NewRx/Patient/Gender
cvc-type.3.1.3: The value '0' of element 'Gender' is not valid.	82	35	/Message/Body/NewRx/Patient/Gender

Errors (11) Affirmatives (0) Warnings (0) Alerts (0)

3) Look up schematron rule details

The screenshot shows the 'Profile Viewer' tab selected in a navigation bar. Below it is a table listing Schematron rules:

Pattern Name	Id	Rule Context	Test Condition	Detail
Pattern: NEWRX_UIH-Errors	NEWRX_UIH-Errors	script:Message	@version='010'	ERROR: The Message/@version shall contain the value 010. See 170.314 (b)(3) Electronic Prescribing.
Pattern: NEWRX_UIB-Errors	NEWRX_UIB-Errors	script:Message/script:Header/script:From		ERROR: The Message/@release shall See 170.314 (b)(3)
Pattern: NEWRX_UIB-Errors	NEWRX_UIB-Errors	script:Message/script:Header/script:From	@Qualifier='D' or @Qualifier='C'	ERROR: The Message/Header/From@Qualifier shall contain value D or C. See 170.314 (b)(3) Electronic Prescribing.
Pattern: NEWRX_UIB-Notes	NEWRX_UIB-Notes	script:Message/script:Header	@Qualifier='P'	ERROR: The Message/Header/To@Qualifier shall contain the value P. See 170.314 (b)(3) Electronic Prescribing.
Pattern: NEWRX_UIB-Notes	NEWRX_UIB-Notes	script:Message/script:Header		

Annotations with numbered callouts explain the table columns:

- 1 Click on Profile Viewer tab.
- 2 Click on Extra Rules link.
- 3 Review details of rules.
- 4 Pattern Name lists the schematron rule type.
- 5 Test Condition lists the rule being tested.
- 6 Detail lists the error message displayed if rule is not met.
- 7 Click on Context-free Validation tab to return to message.

A callout box at the bottom right is titled 'Profile Viewer page' and contains the following text:

This page allows tester to view details of schematron rules, including pattern name, Id, rule context and test condition.

HEALTH IT STANDARDS TESTING INFRASTRUCTURE

Other Utilities

Other Utilities

Message Validation Report

The Message Validation Report is the output of the eRx Test Tool. This report states if the test message has passed or failed the test and identifies the points of failure.

1 Message Validation Report may be downloaded as a PDF, XML, Word or HTML file.

2 Message Validation Report may be printed.

3 Scroll through report to view data that passed validation and any errors.

4 Click on Validation to go back to the message.

The screenshot shows a web-based application for message validation. At the top, there is a navigation bar with tabs: Home, Context-free Validation, Context-based Validation, Profile Viewer, and Documentation. Below the navigation bar, there are four icons representing different download formats: PDF, XML, Word, and HTML. The main content area is titled "Message Validation Report" and includes a timestamp: Date: 11 04 2012, 22:40:54.822-05:00. There are three main sections: "Validation Context Name" (empty), "Message Header Encoding" (empty), and "Message Content". The "Message Content" section contains the following XML code:

```
<!--Scenario: MU2-01: New Prescription - Hydrochlorothiazide 50 mg tablet | MU2 :-->
<!--Frank McKinney | fm@frankmckinney.com-->
<!--HighestVersionSupported="" xsi:schemaLocation="-->
<Message version="010" release="006" HighestVersionSupported="" xsi:schemaLocation=">
  <Header>
    <To Qualifier="P"/>
    <From Qualifier="D"/>
    <MessageID>MU101</MessageID>
    <SentTime>201209-01-02T10:20:10</SentTime>
```