

**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

NIST Immunization Test Suite for HL7v2 Validation Tutorial

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*Use as a reference wherever applicable in the Tutorial

NIST Immunization Test Suite Overview

Tool Key Capabilities

SOAP Envelope Testing	The SOAP Envelope Testing ensures SOAP envelopes are correctly formed, validating the conformance of the messages to the requirements in the SOAP and Transport specifications. <i>This feature is not used for ONC certification testing.</i>
SOAP Connectivity Testing	The SOAP Connectivity Testing evaluates valid SOAP connectivity, the ability to send and receive SOAP messages, validating the conformance of the messages to the requirements in the SOAP and Transport specifications. <i>This feature is not used for ONC certification testing.</i>
Context-Free Testing	Provides a simple and convenient method for testing immunization messages structure and most vocabulary. Validation is performed on messages with or without a SOAP wrapper.
Context-Based Testing 2015 ONC Certification	Context-based testing provides in addition to HL7 Context-free validation, message validation associated with a given test script that includes data for a specific test scenario where the context is known by the validation tool. It also validates messages with a SOAP wrapper.
Isolated Testing	Isolated testing provides a simulated operational environment that allows validation at the functional level in addition to content and context-free testing, where Test Agents simulate the functions of IZ EHR-S or IIS.

Environment: The NIST IZ Test Suite is currently only accessible as a web application.

Supported Browsers: Firefox (recommended), Chrome (recommended), Safari, and IE 9+

URL: <http://hl7v2-iz-r1.5-testing.nist.gov>

Tool Access and Home Page Navigation

Objectives

- Establish access to the NIST IZ Test Suite (web application)
- Locate the **Menu Bar**
- Locate the validation tools
- Locate relevant documentation

Informative Reference

- The NIST IZ Test Suite is accessible through the following URL: <https://hl7v2-iz-r1.5-testing.nist.gov>
- The **Documentation** web page (containing relevant downloadable User Documentation, Resources/Artifacts, and Notations) displays when the **Documentation** option is selected

1

The Tool's **Menu Bar** is located along the top of the screen. The options are: **Home**, **SOAP Envelope**, **SOAP Connectivity**, **HL7 Context-free**, **HL7 Context-based**, **Documentation**, **About**, and **Hello Guest**.

The **Hello Guest** option is a dropdown menu that provides **Login**, **Registration**, **Reset Password**, **Transport Settings**, and **Validation Settings** functions.

NIST Immunization Test Suite 1.6.0

Welcome to the NIST Immunization Test Suite!

Supporting

The NIST Immunization Test Suite supports a broad range of testing in support of the Immunization Community, including transport, messaging (content), and functional:

- CDC SOAP Validation
- HL7 V2.5.1 Immunization Message Implementation Guide Release 1.5
- EHR and IIS Functional Capabilities (2016)
- 2015 ONC Health IT Certification

2015 ONC Health IT Certification [Start ONC Testing](#)

Have a Question?

A Google Group (hl7v2-immunization-testing) has been established for discussions about the implementation Guide, testing tool, and testing issues. No membership is required. A Google account is required for posting. **Note:** The same Google Group is being used for submitting questions/comments related to the 2014 and 2015 Editions of the NIST Certification Test Tool and general Immunization related topics. When asking questions, please specify the edition of the tool and version of the standard to which the questions apply.

- Site: <https://groups.google.com/forum/#!forum/hl7v2-immunization-testing>
- Email: hl7v2-immunization-testing@googlegroups.com

Supported Browsers

The following browsers are supported:

- Chrome (Recommended)
- Firefox (Recommended)
- Safari
- IE 9+

SOAP Envelope [Start Testing](#)

SOAP Connectivity [Start Testing](#)

HL7 Context-free [Start Testing](#)

HL7 Context-based [Start Testing](#)

ONC 2015 Certification

Phase-by-phase testing:
Start simple and progress
Independent—can enter at any stage
Phase 4 (ONC 2015 Certification Test Plan)
Multiple levels within a phase
Detailed test cases and associated data

Transport

Content

Functional

Validate message to SOAP envelope and to CDC WSDL (EHR-S and IIS)

Echo back, Fail generation (Message ID, Message Size, etc.)

Context-free Testing

Context-based Testing

HL7 Context-free Testing

HL7 Context-based Testing

EHR-S Functional Testing

IIS Functional Testing

Interactive round-trip: scenario and functional testing (End-to-end Testing)

2

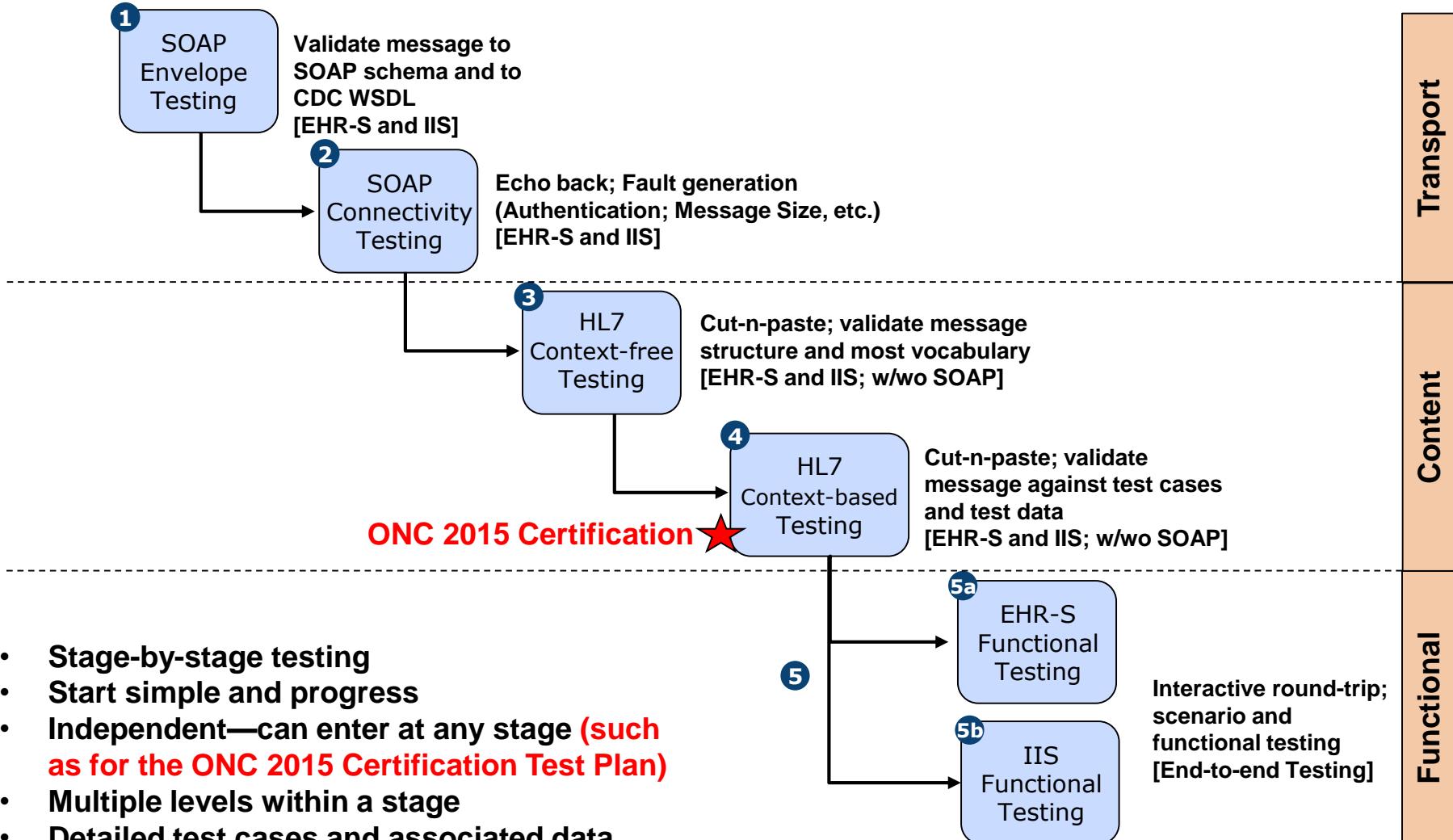
The **Welcome** screen is accessed via the **Home** option.

3

The **Welcome** screen provides access to features and information:

- Testing Types Supported, Submission of Questions, Supported Browsers
- NIST Immunization Test Suite validation tools (also on Menu Bar)
- Focus of each Testing Stage and Testing Stage benefits

Immunization Test Suite: Overview and Capabilities



- Stage-by-stage testing
- Start simple and progress
- Independent—can enter at any stage (**such as for the ONC 2015 Certification Test Plan**)
- Multiple levels within a stage
- Detailed test cases and associated data

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NIST Immunization Test Suite Context-free Testing Tool Demonstration

Context-free Testing Work Flow

1) Select HL7 Context-free Conformance Profile

- Open the NIST Immunization Test Suite using the following link: <https://hl7v2-iz-r1.5-testing.nist.gov>
- Click on the **HL7 Context-free** option on the Menu Bar.
- Select the desired conformance **Profile** from the available options in the displayed **Profile Group**.

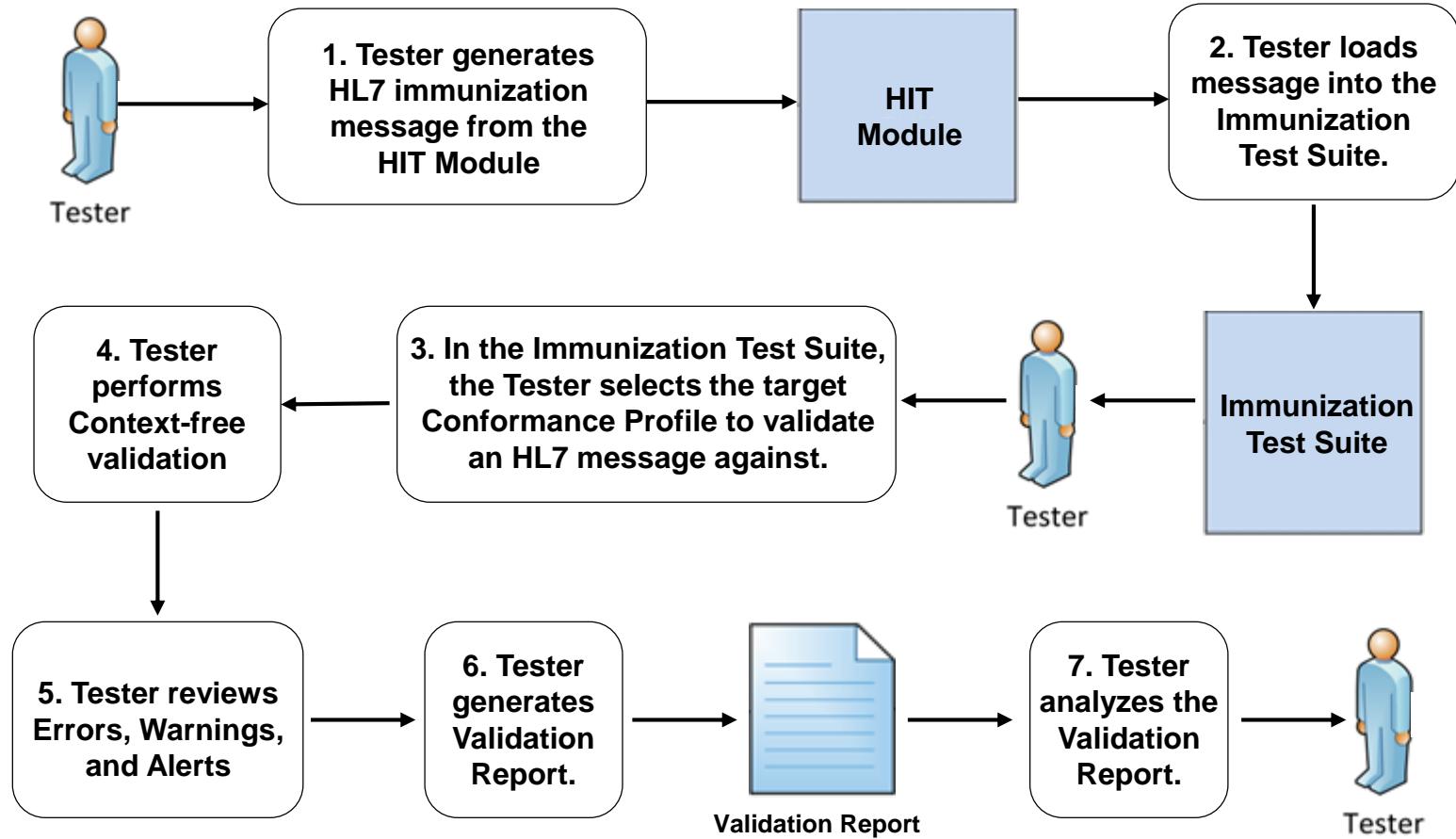
2) Load an HL7 Message and Execute Validation

- Enter an HL7 message into the NIST IZ Test Suite's **Message Content** window, by loading either the provided example message (**Load Example** button) or a message saved on the Tester's local machine (use **Browse** button to find and copy/paste the HL7 message into the **Message Content** window).
- View the **Message Tree** to check the populated HL7 message elements/segments.
- Click the **Expand All** arrow icon to view the maximum details in the **Message Tree**, and click the **Collapse All** arrow icon to minimize the view of the content in the **Message Tree**.
- Click on the **Validate** button to initiate validation of the message manually, or wait for the validation interval to trigger automatic validation.

3) Review Validation Testing Results, Generate Report, and View Data Elements

- Use the **Message Validation Result** window to review the validation testing results (**Errors**, **Warnings**, and **Alerts**).
- If Errors, Warnings, or Alerts are detected by the validator, details will appear in a table in the lower part of the **Message Validation Result** window; click on the location information in the **Path** column of the table to cause the associated elements to become highlighted in yellow in both the **Message Content** and **Message Tree** windows.
- Select the **Report** tab (or click on the **Report** button in the **Message Validation Result** window) to view the **Message Validation Report**.
- Select the **Profile Viewer** tab to view conformance requirements for the data elements in the message for the specified **Profile**.
- Select the **ValueSets** tab to access the tables and value sets associated with the data elements in the message for the specified **Profile**.

HL7 Message Context-free Validation Testing Workflow



Context-free Testing – Conformance Profile Selection

Objectives

- Locate the **HL7 Context-free** option on the Menu Bar.
- Locate the NIST Immunization Test Suite's available conformance **Profiles**.
- Access additional information for standard / implementation guide documentation and profile linkages.

Informative Reference

- The **HL7 Context-free** option provides basic HL7 v2 immunization message testing capabilities via the message validation engine.
- The conformance **Profiles** are from the *HL7 Version 2.5.1 Implementation Guide for Immunization Messaging Release 1.5* document, which is accessible from the **Documentation** tab

1

Select **HL7 Context-free** from the Menu Bar.

2

From the Context-free testing screen, select the **Profile** for the HL7 message that is to be tested.

The screenshot shows the NIST Immunization Test Suite interface. At the top, there is a navigation bar with links: Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free (which is highlighted with a yellow background), HL7 Context-based (which is also highlighted with a yellow background), Documentation, and About. On the far right, it says "Hello Guest". Below the navigation bar, there is a search bar with "Profile Group Type: Public" and "Profile Groups: Immunization 2.5.1 IG Release 1.5". The main content area displays a list of profiles under the heading "Immunization 2.5.1 IG Release 1.5". A checkbox next to "VXU-Z22" is checked. Other listed profiles include ACK-Z23, QBP-Z34, QBP-Z44, RSP-Z31, RSP-Z32, RSP-Z33, and RSP-Z42.

Context-free Testing – Load HL7 Message

3

Selected conformance **Profile** is highlighted in yellow, and **Validation** window for that Profile displays.

4

Load the message into the **Message Content** window.

The screenshot shows the HL7 Context-free Testing interface. At the top, there is a navigation bar with links: Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free (selected), HL7 Context-based, Documentation, About, and a Hello Guest button. Below the navigation bar, there are tabs for Test Execution, Profiles, Validation, Report, Profile Viewer, and ValueSets. The Profiles tab is selected, showing a list of profiles under 'Immunization 2.5.1 IG Release 1.5'. One profile, 'VXU-Z22', is highlighted in yellow. A dashed arrow points from the 'VXU-Z22' entry in the list to the 'Profile: VXU-Z22' section on the right. This section contains tabs for Validation (selected), Report, Profile Viewer, and ValueSets. Below these tabs is a 'Message Tree' panel. To the right of the tree is a 'Message Content' panel with a text area containing the number '1'. At the bottom of the interface, there are buttons for Validate, Load Example, Browse, Download, Clear, Remove Duplicates, and Report. A message at the bottom states 'No Validation Performed.'

Context-free Testing – HL7 Message Validation

5 Click the **Validate** button to initiate validation of the message.

6 View the results displayed in the **Message Validation Result** window.

7 Click on the **Path** link to cause yellow highlighting to appear in the **Message Tree** and **Message Content** windows indicating the location of those data in the HL7 message.

The screenshot shows the NIST HL7 Context-free Validation tool interface. At the top, a navigation bar includes links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free (selected), HL7 Context-based, Documentation, About, and a user dropdown. Below the navigation is a toolbar with Profile Group Type (Public), Profile Groups (Immunization 2.5.1 IG Release 1.5), and other profile management buttons. The main area is divided into three main sections: **Message Tree**, **Message Content**, and **Message Validation Result**. The **Message Tree** shows the hierarchical structure of the HL7 message with various segments and components highlighted in yellow. The **Message Content** section displays the raw HL7 message text. The **Message Validation Result** section shows the validation outcomes with tabs for Errors (2), Warnings (17), and Alerts (21). It also includes a 'Highlight All' feature that highlights specific paths in the message tree and content. A large yellow callout box at the bottom right points to the 'Path' link in the validation result table.

Context-free Testing – HL7 Message Validation Report (1)

The screenshot shows the HL7 Context-free Validation interface. At the top, there are tabs for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free (selected), HL7 Context-based, Documentation, and About. A yellow bar at the top right says "Hello Guest". Below the tabs, there are buttons for Test Execution, Profiles, and a dropdown for Profile Group Type (Public) and Profile Groups (Immunization 2.5.1 IG Release 1.5).

The main area has three tabs: Validation (selected), Report, Profile Viewer, and ValueSets. The Validation tab shows a "Message Tree" on the left and "Message Content" on the right. The Message Tree lists various HL7 segments and components, with some specific fields highlighted in yellow. One field, RXA[1]-5[1].1.Identifier R, contains the value "33332-0010". The Message Content tab displays the raw HL7 message with several lines numbered 1 through 11.

Below the message content is a "Message Validation Result" section with tabs for Errors (2), Warnings (17), and Alerts (21). It also has buttons for Remove Duplicates and Report. The "Report" button is highlighted with a blue circle and the number 8. The validation results table shows two rows:

Path	Description	Line #
RXA[1]-5[1].1	The value '33332-0010' at location Component RXA-5.1 (Identifier) is not member of the value set NDC_Used or NDC_Sale	6
RXR[1]-2[1].3	Invalid Code System. Expected: 'HL70163', Found: 'HL70663'	7

8

Click on the **Report** button or the **Report** tab to view the consumable **Message Validation Report** that captures the complete results of the Context-free validation testing.

Context-free Testing – HL7 Message Validation Report (2)

The screenshot shows the NIST HL7 Message Validation Report interface. The top navigation bar includes links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free (selected), HL7 Context-based, Documentation, About, and Hello Guest.

The main content area displays a validation report for the Immunization 2.5.1 IG Release 1.5 profile group. The report includes sections for Profile Groups, Validation Type (Context-Free), Testing Tool (NIST Validation Tool, Version 1.2.2), and Profile details (Name: Unsolicited Immunization Update, Organization: NIST, Type: Constraining, Version: 1.0.1, Date: 20160328).

A callout box labeled "info" points to the "Message" section, which contains the HL7 message being validated:

```
MSH|^~\&|Test EHR Application|X68||NIST Test Iz Reg|20120701082240-0500||VXU^V04^VXU_V04|NIST-IZ-001.00|P|2.5.1||ER|ALI|||Z22^CDCPHINVS  
PID|1||D26376273^NIST MPI^MR|ISnow^Madelynn^Ainsley^L|Lam^Morgan^AAAAM|20070706|F|2076-8^Native Hawaiian or Other Pacific Islander^CDCREC|32 Prescott Street Ave^Warwick^MA^02452^USA^LI^PRN^PH^657^5558563|
```

Below the message, the "Failures interpretation" section is shown, divided into Summary, Validation Errors, and a detailed table of failure categories and counts.

Annotations provide instructions for interacting with the report:

- An annotation labeled "The Message Validation Report presents the complete results of HL7 message validation testing in an easily consumable format." points to the summary text.
- An annotation labeled "Metadata, such as validation testing type, tool used, and profile used to validate against, are included in the report." points to the profile and tool information.
- An annotation labeled "A detailed list of the Errors (i.e., validation fails), Alerts, Warnings, Information elements, and Affirmatives (i.e., validation successes and condition predicate satisfactions) also are presented in the report." points to the failures interpretation table.
- An annotation labeled "Click Download As to select/view/print one of the Report format options from the dropdown menu." points to the "Download As" button and its dropdown menu options (PDF, XML, HTML).
- An annotation labeled "Click on the View button to cause the Failure Interpretation Categories information to display, providing classifications for types of errors." points to the "View" button in the failures interpretation table.

Context-free Testing – HL7 Message Validation Report (3)

The screenshot shows the 'Message Validation Report' page from the 'Immunization 2.5.1 IG Release 1.5' application. The report details a validation run on 02/22/2018 at 16:04:48.503-05:00 using the 'Context-Free' validation type with the NIST Validation Tool (Version 1.2.2). The profile used was 'VXU-Z22' (Unsolicited Immunization Update) from NIST, constrained by the NIST Validation Tool. The message content is a HL7 FHIR message for a patient named Madelynn Ainsley, born 1976-8, residing in Native Hawaiian or Other Pacific Islander ethnicity, at 32 Prescott Street Ave, Warwick, MA 02452, USA. The message includes details of a vaccination record (NDC 051ml, 100 New immunization record), a prescription (PRN), and a medication (RADON^NICHOLAS). The validation errors section shows two errors related to the vaccine funding program category and the date of vaccination information statement.

Message Validation Report

02 22 2018, 16:04:48.503-05:00

Validation Type: Context-Free

Testing Tool: NIST Validation Tool 1.2.2

Profile: Name: Unsolicited Immunization Update Organization: NIST Type: Constraintable Profile Version: 1.0.1 Profile Date: 20160328 Standard: 2.5.1

Message

MSH|^~\&|Test EHR Application|X68||NIST Test Iz Reg|20120701082240-0500|||VXU^V04^VXU_V04|NIST-IZ-001.00|P|2.5.1||||ER|AL||||Z22^CDCPHINVS

PID|||D26376273^^^NIST MPI^MR|Snow^Madelynn^Ainsley^^^^L|Lam^Morgan^^^^M|20070706|F|||2076-8^Native Hawaiian or Other Pacific Islander^CDCREC|32 Prescott Street Ave^Warwick^MA^02452^USA^|||^PRN^PH^^657^5558563|||||||2186-5^non Hispanic or Latino^CDCREC

PDI|||||||02^Reminder/Recall - any method^HL70215|||||A|20120701|20120701

NK1||1|Lam^Morgan^^^^L|MTH^Mother^HL70063|32 Prescott Street Ave^Warwick^MA^02452^USA^L|^PRN^PH^^657^5558563

ORC|RE||IZ-783274^NDA||||||I-23432^Burden^Donna^A^^^^NIST-AA-1^^^^PRN|||57422^RADON^NICHOLAS^Aa-1^L^^MD

RXA|0|||20120814|||33332-0010-01^Influenza, seasonal, injectable, preservative free^NDC|0.5|mL^Milliliter [SI Volume Units]^UCUM||00^New immunization record^NIP001|7832-1^Lemon^Mike^A^^^^NIST-AA-1^^^^PRN|^X68||||Z0860BB|20121104|CSL^CSL Behring^MVX|||CPA

RXR|C28161^Intramuscular^NCIT|LD^Left Arm^HL70163

OBX|1|CE|64994^Vaccine funding program eligibility category^LN|||V05^VFC eligible - Federally Qualified Health Center Patient (under-insured)^HL70064|||||F|||20120701|||VXC40^Eligibility captured at the immunization level^CDCPHINVS

OBX|2|CE|30956-7^vaccine type^LN|||2|88^Influenza, unspecified formulation^CVX|||||F

OBX|3|TS|29768-9^Date vaccine information statement published^LN|||2|20120702|||||F

OBX|4|TS|29769-7^Date vaccine information statement presented^LN|||2|20120814|||||F

Failures interpretation

Category	Classification
RE_USAGE	WARNING
CONSTRAINT_FAILURE	ERROR

Download As: PDF, XML, HTML

Count : 2

Count : 1

Profile Viewer – Data Element Conformance Constructs



This feature provides an interactive interface for viewing the HL7 message elements and their conformance constructs for the selected **Profile**. Can be used to assist in the interpretation of errors, and to perform supplemental message validation, error remediation, and troubleshooting.

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Select the **Profile Viewer** tab to access a browsable version of the requirements for the specified conformance Profile.

The screenshot shows the Profile Viewer interface with the following details:

- Top Navigation:** Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based (selected), Documentation, About, Hello Guest.
- Left Sidebar:** Profile Group Type: Public, Profile Groups: Immunization 2.5.1 IG Release 1.5, Profiles: Immunization 2.5.1 IG Release 1.5, Immunization 2.5.1 IG Release 1.5, V22, ACK-Z33, QBP-Z34, QBP-Z44, RSP-Z31, RSP-Z32, RSP-Z33, RSP-Z42.
- Central Content:** Profile: VXU-Z22, Validation, Report, Profile Viewer (selected), ValueSets, R, RE, C (only), R, RE, C, O, X (All), Concise View, Expanded View.
- Data Table:** A table listing data elements with the following columns:

Name	Usage	Cardinality	Length	Data type	ValueSet	Predicate	Conf. Statement
1.MSH:Message Header	R	[1, 1]					
3.PID:Patient Identification	R	[1, 1]					
4.PD1:Patient Additional Demographic	RE	[0, 1]					
5.NK1:Next of Kin / Associated Parties	RE	[0, *]					
NK1-1:Set ID - NK1	R	[1,1]	[1,4]	SI			IZ-70 : The Value of NK1-1 (Set ID-NK1) SHALL be valued sequ
NK1-2:Name	R	[1,*]	[1,250]	XPN_IZ			
NK1-2.1.Family Name	R	[1,194]		FN			
NK1-2.1.1.Surname	R	[1,50]		ST			
NK1-2.2.Given Name	R	[1,30]		ST			
NK1-2.3.Second and Further Given Names or ...	RE	[1,30]		ST			
NK1-2.7.Name Type Code	R	[1,1]		ID	HL70200_IZ		
NK1-3:Relationship	R	[1,1]	[1,250]	CE_IZ	HL70063_IZ		
NK1-4:Address	RE	[0,*]	[1,250]	XAD_IZ			
NK1-5:Phone Number	RE	[0,*]	[1,250]	XTN_IZ			
9.VXU_V04.ORDER	RE	[0, *]					
- Annotations:**
 - 12: To filter the view of the data elements according to **Usage***, click either the **R, RE, C (only)** button or the **R, RE, C, O, X (All)** button.
* R – Required, RE – Required, but may be empty, C – Conditional, O – Optional, X – Not Supported
 - 13: To view details for each message segment, click on the **Full** tab and then open the desired segment using the arrows (or click on the desired segment tab (e.g., **NK1**)).
 - 11: Select the **Profile Viewer** tab to access a browsable version of the requirements for the specified conformance Profile.
 - 14: To view the full display verbiage for any element in the table, click the **Expanded View** button.
 - info: Message elements are annotated with color-coded indicators.
 - info: Usage, Cardinality, Length (minimum/maximum for the data), Data Type, ValueSet, (Condition) Predicate, and Conformance Statement are listed for each message element.

Value Sets Viewer – Data Element Conformance Vocabulary (1)



This feature provides a browsable view of the vocabulary requirements for the selected **Profile**. Can be used to assist in the interpretation of value set errors.

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Select the **ValueSets** tab.

The screenshot shows the NIST Health IT Standards Testing Infrastructure web application. At the top, there is a navigation bar with links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based (which is highlighted in yellow), Documentation, and About. On the right, it says Hello Guest. Below the navigation bar, there are dropdown menus for Profile Group Type (Public) and Profile Groups (Immunization 2.5.1 IG Release 1.5). The main content area is titled "Profile: VXU-Z22". It has tabs for Validation, Report, Profile Viewer, and ValueSets (which is highlighted in blue). Under the ValueSets tab, there is a section for "ValueSet Collections" with tabs for CDC-HL7-IZ (highlighted in yellow), CDC-IZ, and HL7. A search bar and a table listing various value sets are also present. The table data is as follows:

Binding Identifier	Value Set Name
HL70001_IZ	Sex
HL70003_IZ	Event type
HL70061_IZ	Check digit scheme
HL70063_IZ	Relationship
HL70064_IZ	Publicity code
HL70076_IZ	Message type
HL70085_IZ	Observation result status codes interpretation
HL70086_IZ	Plan Type ID
HL70103_IZ	Processing ID

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Select a **ValueSet Collection** tab to display the list of **Value Set Names** and **Binding Identifiers**



This search feature provides the ability to search for a Value Set (that is included in the Tool) based on **Binding Identifier**, **Value** (code), **Value Set Code**, **Value Set Name**, or **Description**.

Value Sets Viewer – Data Element Conformance Vocabulary (2)

The screenshot shows the NIST Health IT Standards Testing Infrastructure Value Sets Viewer. The top navigation bar includes links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, and About. A user 'Hello Guest' is logged in. The main content area displays a 'Profile Groups' dropdown set to 'Immunization 2.5.1 IG Release 1.5'. On the left, a sidebar shows 'Profile Group Type: Public' and a list of profiles under 'Immunization 2.5.1 IG Release 1.5', with 'VXU-Z22' selected. The central panel shows a 'Profile: VXU-Z22' view with tabs for Validation, Report, Profile Viewer, and ValueSets. The ValueSets tab is active, displaying 'ValueSet Collections' with tabs for CDC-HL7-IZ, CDC-IZ, and HL7, and a search bar. Below is a table of 'Binding Identifier' and 'Value Set Name' pairs:

Binding Identifier	Value Set Name
HL70001_IZ	Sex
HL70003_IZ	Event type
HL70061_IZ	Check digit scheme
HL70063_IZ	Relationship
HL70064_IZ	Publicity code
HL70076_IZ	Message type
HL70085_IZ	Observation result status codes interpretation
HL70086_IZ	Plan Type ID
HL70103_IZ	Processing ID

A callout box labeled 17 points to the 'HL70001_IZ' link in the table, with the text: 'Click on a Binding Identifier link for a Value Set to display it in the lower portion of the Value Set Information window.' A callout box labeled 18 points to the 'Value Set Information' header, with the text: 'View Value Set information'.

The 'Value Set Information' window contains sections for 'Value Set Attributes' and 'Value Set Elements'. The 'Value Set Attributes' section shows 'Binding Identifier' as HL70001_IZ and 'Value Set Name' as Sex. The 'Value Set Elements' section contains a search bar and a table:

Code	Code System	Description
F	HL70001	Female
M	HL70001	Male
U	HL70001	Unknown/undifferentiated

An info icon with a callout box points to the search feature, stating: 'This search feature provides the ability to search this Value Set based on the Code, Code System, or Description.'

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NIST Immunization Test Suite Context-based Testing Tool Demonstration



Context-based Testing Work Flow Overview

1) Select HL7 Context-free Conformance Profile

- Open the NIST Immunization Test Suite using the following link: <https://hl7v2-iz-r1.5-testing.nist.gov>
- Click on the **HL7 Context-based** option on the Menu Bar.
- Expand the view in the **Test Cases** navigation bar on the Test Selection function screen to open and display the Test Cases and Test Steps.
- Select a Test Step or a Test Case (must select a Test Case to use automated transport) and click **Load Test Step** or **Load Test Case**.

2) Load an HL7 Message and Execute Validation

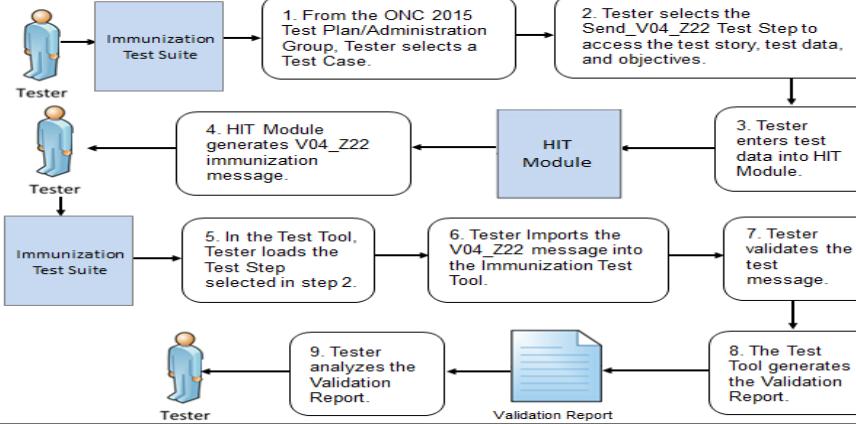
- Enter an HL7 message into the NIST IZ Test Suite's **Message Content** window
- Click on the **Validate** button to initiate validation of the message manually, or wait for the validation interval to trigger automatic validation.
- View the **Message Tree** to check the populated HL7 message elements/segments.

3) Review Validation Testing Results, Generate Report, and View Data Elements

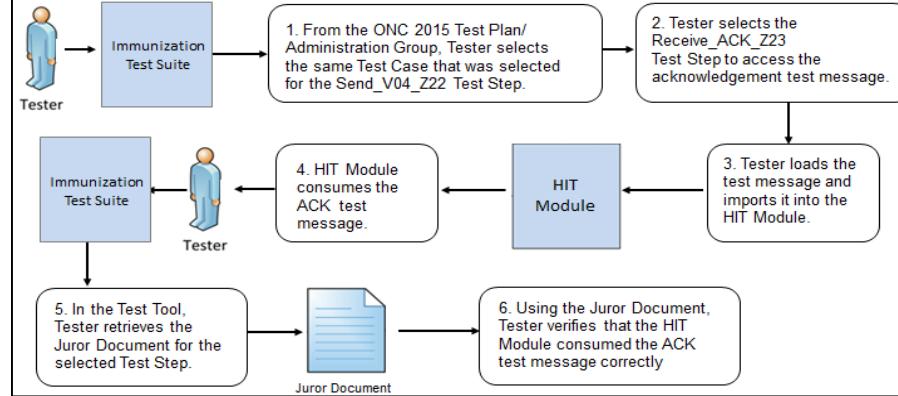
- Use the **Message Validation Result** window to review the validation testing results (**Errors**, **Warnings**, and **Alerts**).
- If Errors, Warnings, or Alerts are detected by the validator, details will appear in a table in the lower part of the **Message Validation Result** window; click on the location information in the **Path** column of the table to cause the associated elements to become highlighted in yellow in both the **Message Content** and **Message Tree** windows.
- Select the **Report** tab (or click on the **Report** button in the **Message Validation Result** window) to view the **Message Validation Report**.
- Select the **Profile Viewer** tab to view profile-specific conformance requirements for the data elements in the message.
- Select the **ValueSets** tab to access the profile-specific tables and value sets associated with the data elements in the message.

HL7 Message Context-based Validation Testing Workflow

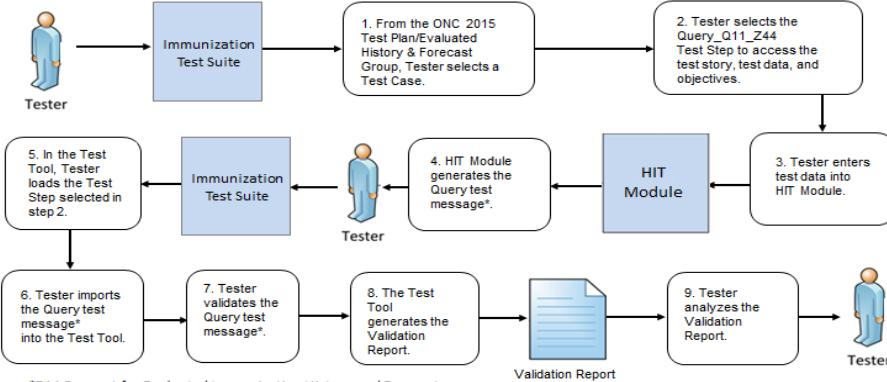
Create Immunization Message Testing Workflow



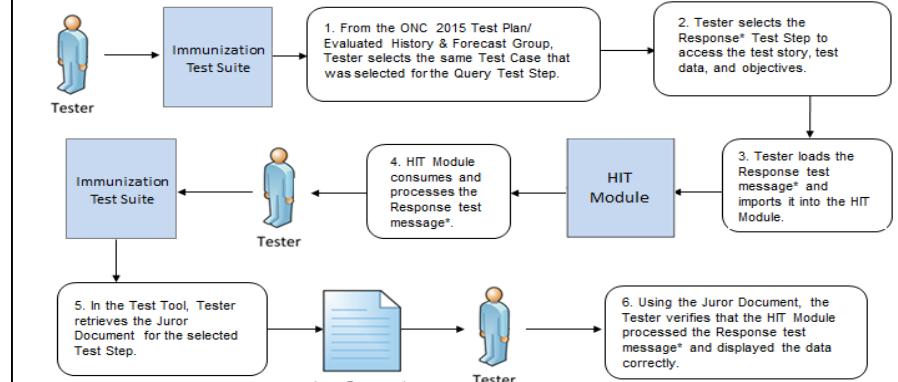
Consume Acknowledgement Message Testing Workflow



Request Evaluated Immunization History & Immunization Forecast Testing Workflow



Receive & Display Evaluated Immunization History & Immunization Forecast Testing Workflow



Using Context-based Capabilities

Context-based testing can be accomplished in any of the following ways:

- ***Single Message Method Test Step Level (step-by-step) testing*** consists of separate validation of each message in a Test Case. After accessing the desired Context-based Test Plan and *opening* a Test Case, the Tester *selects and loads* each of the Test Steps in their given sequence and validates the corresponding messages individually.
- ***Multiple Message Method Test Case Level testing without automated transport*** provides the capability of loading a complete Test Case (all Test Steps) at once. After accessing the desired Context-based Test Plan and *selecting and loading* a Test Case, the Tester sees all of the Test Steps listed in order on the Test Execution screen and validates the corresponding messages by clicking on the “Next” button to advance from Test Step to Test Step.
- ***Multiple Message Method Test Case Level testing with automated transport*** is similar to multiple message testing without automated transport, except the HIT Module that is being tested is able to communicate (transmit and receive messages) automatically with the NIST Immunization Test Suite via the SOAP protocol.

A demonstration for each method is provided in the next several slides.

**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

Context-based Test Step Level Testing Demonstration

Context-based Test Step Level Testing – Getting Started (1)

Objectives

- Locate the **HL7 Context-based** option on the Menu Bar.
- Locate Test Steps in the Test Cases navigation bar.
- Access Test Step-specific information via the corresponding tabs.
- Load a Test Step and execute the validation process.

Informative Reference

- The **HL7 Context-based** option provides HL7 v2 immunization message testing capabilities using specific test scenarios and the message validation engine.

1

Select **HL7 Context-based** from the Menu Bar.

The screenshot shows the HL7 Context-based interface. At the top, there is a yellow navigation bar with links: Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based (which is highlighted), Documentation, and About. Below the navigation bar, a blue header bar says "Hello Guest". Underneath, a sub-header bar has "Test Selection" and "Test Execution" with a red circle around "Test Selection". A dropdown menu shows "Test Plan Type: Public" and "Test Plan: ONC 2015 Test Plan". The main content area is titled "Test Cases" and displays a hierarchical tree view of test cases under the "ONC 2015 Test Plan". A blue circle with the number "2" points to the "Expand All" arrow icon next to the "Test Selection" function. A callout box with a blue border and a red circle around "Test Selection" contains the text: "Click the **Expand All** arrow icon on the **Test Selection** function screen to open and display the Test Cases and Test Steps."

Context-based Test Step Level Testing – Getting Started (2)

The screenshot shows the HL7 Context-based Test Selection interface. At the top, there are navigation links: Home, SOAP Envelope, SOAP Connectivity, HL7 Context-based, Documentation, and About. A user 'Hello Guest' is logged in. Below the header, the 'Test Selection' tab is active. The main area displays a tree view of test cases under 'ONC 2015 Test Plan'. A specific test step, '1.IZ-AD-1.1_Send_V04_Z22', is selected and highlighted in yellow. To the right, a detailed view of this test step is shown in a 'TestStep: IZ-AD-1.1_Send_V04_Z22' window. The window has tabs: Test Story, Test Data Specification, Message Content, Example Message, FULL, Description, Comments, Pre Condition, Post Condition, Test Objectives, Evaluation Criteria, and Notes for Testers. The 'Description' tab is selected, displaying a narrative about a two-month-old male infant named Russell Clinton Richardson. The 'Notes for Testers' tab is also highlighted in yellow. A large callout box labeled 'info' provides instructions for step 7.

3 Select a **Test Step**.

4 View the **Test Story** displayed in the TestStep window for the selected Test Step. The **FULL** tab is selected automatically for display of all sections of the Test Story.

5 Scroll down to review the additional information in the sections provided on the **Full Test Story** tab.

6 Select the tab for each section to view just the specified information, e.g., **Notes for Testers**.

7 Click on **Download PDF** button to obtain the **Test Story** document.

info The Load Test Step button can be clicked to begin the validation process once a Test Step has been selected and before viewing of any of the available tabs.

Context-based Test Step Level Testing – Test Data Specification

The screenshot shows a web-based application for testing HL7 messages. At the top, there's a navigation bar with links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based (which is selected), Documentation, and About. A user 'Hello Guest' is logged in. Below the navigation is a toolbar with Test Selection and Test Execution buttons. The main area is titled 'Test Plan Type: Public' and 'Test Plan: ONC 2015 Test Plan'. On the left, a tree view shows test cases under 'ONC 2015 Test Plan' and various administrative groups. One specific test case, 'IZ-AD-1_Admin_Child' with ID '1.IZ-AD-1_1_Send_V04_Z22', is highlighted. The main content area displays a 'TestStep: IZ-AD-1.1_Send_V04_Z22' page. The 'Test Data Specification' tab is active, showing five tabs: FULL (selected), Patient Information, Immunization Registry Information, Guardian or Responsible Party[*], and Vaccine Administration Information[*]. The 'Patient Information' section contains fields for Patient Name (Russell Clint Richardson), Mother's Maiden Name (Billington), ID Number (3123), Date/TIME of Birth (04/15/2015), Administrative Sex (Male), Patient Address (543 Blount Drive Bozeman MT 59715 USA), Local Number ((406)555-7690), Race (American Indian or Alaska Native), Ethnic Group (Not Hispanic or Latino), Multiple Birth Indicator (No), and Birth Order (1). The 'Immunization Registry Information' section includes fields for Immunization Registry Status (Active), Immunization Registry Status Effective Date (04/15/2015), Publicity Code, Publicity Code Effective Date (06/24/2015), Protection Indicator (No), and Protection Indicator Effective Date (06/24/2015). The 'Guardian or Responsible Party[*]' section is partially visible. The 'Vaccine Administration Information' section is also partially visible. A 'Download PDF' button is located at the bottom right of the 'Test Data Specification' tab.

8 Click on the **Test Data Specification** tab to view the real-world information that would typically be available for a given situation in the specified clinical setting.

9 The **Full** tab is selected by default.

10 Select the tab for each section to view just the specified information, e.g., *Vaccine Administration Information*.

11 Scroll down to review the additional information in the sections provided on the **Full Test Data Specification** tab.

12 Click on **Download PDF** button to obtain the **Test Data Specification** document.

Context-based Test Step Level Testing – Message Content

13

Click on the **Message Content** tab to view a conformant message instance for the Test Step.

20

Click on the **Example Message** tab to view the example HL7 immunization message provided for the Test Step.

21

Click on **Load Test Step** to begin the validation process

The screenshot shows the HL7 Context-based tool interface. At the top, there's a navigation bar with links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based (which is selected), Documentation, and About. Below the navigation bar, the Test Plan Type is set to Public and the Test Plan is ONC 2015 Test Plan. The main area displays a Test Step titled 'TestStep: IZ-AD-1.1_Send_V04_Z22'. Under this, there are tabs for Test Story, Test Data Specification, Message Content (which is selected), and Example Message. A 'Help' button is also present. Below the tabs, there are buttons for FULL, MSH, PID, PD1, NK1[], ORC[], RXA[], RXR[], and OBX[]. The 'PID' button is highlighted. The 'Message Content' section shows a detailed table of data elements:

Location	Data Element	Data	Categorization
PID-1	Set ID - PID	1	Value-Profile Fixed
PID-3	Patient Identifier List		
PID-3.1	ID Number	3123	Presence-Content Indifferent
PID-3.4	Assigning Authority		
PID-3.4.1	Namespace ID	NIST-MPI-1	Presence-Content Indifferent
PID-3.4.2	Universal ID		Indifferent
PID-3.4.3	Universal ID Type		Indifferent
PID-3.5	Identifier Type Code	MR	Value-Test Case Fixed
PID-5	Patient Name		
PID-5.1	Family Name		
PID-5.1.1	Surname	Richardson	Presence-Content Indifferent
PID-5.2	Given Name	Russell	Presence-Content Indifferent
PID-5.3	Second and Further Given Names or Initials Thereof	Clint	Presence-Content Indifferent
PID-5.7	Name Type Code	L	Value-Test Case Fixed
PID-6	Mother's Maiden Name		
PID-6.1	Family Name		
PID-6.1.1	Surname	Billington	Presence-Content Indifferent
PID-6.7	Name Type Code		
PID-7	Date/Time of Birth	M	Value-Profile Fixed
PID-7.1	Time	20150415	Presence-Content Indifferent
PID-8	Administrative Sex	M	Value-Test Case Fixed
	Race		

Annotations with numbers 13, 14, 15, 16, 17, 18, 19, 20, and 21 point to various parts of the interface and the table to explain specific features of the HL7 message content.

Context-based Test Step Level Testing – Message Validation (1)



Clicking on the **Load Test Step** button causes the **Test Execution** screen to display.



The **Validation** tab is selected by default.

The screenshot shows the NIST Health IT Standards Testing Infrastructure interface. At the top, there is a navigation bar with links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, and About. A user 'Hello Guest' is logged in. Below the navigation bar, the title 'ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child / IZ-AD-1.1_Send_V04_Z22' is displayed. The main content area has tabs for Validation (selected), Report, Profile Viewer, and ValueSets. On the left, there is a 'Message Tree' panel. The right side shows a 'Message Content' window with a text area containing '1'. Below the text area, there are buttons for Validate, Load Example, Browse, and Clear. At the bottom of the window, there is a message validation result section with a checkbox for 'Message Validation Result', a help link, and buttons for Remove Duplicates and Report. A red circle highlights the 'Test Execution' link in the navigation bar.

22 The **Validation** tab is selected by default.

23 The name of the Test Step appears at the top of the **Test Execution** screen.

24 Click on the **Test Story** or **Test Data Specification** or **Message Content** or **Example Message** tabs to view that information from the **Test Execution** screen...then click on the **Validation** tab to return to the Validation function.

25 Load the message into the **Message Content** window.

Context-based Test Step Level Testing – Message Validation (2)

26

Click the **Validate** button to initiate validation by the Tool.

27

Validation result produced by the Test Tool for this Test Step displays automatically in the **Test Step Outcome** field.

info

The icon displays in Comments column for adding **Test Step-specific Comments** to the Validation Report

info

Download button displays in **Report** column for quick download/view/print capability

The screenshot shows the HL7 Context-based Test Tool interface. At the top, there are tabs for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based (selected), Documentation, and About. Below the tabs, the current test selection is IZ-AD-1.1_Send_V04_222. The main area displays a table of test steps:

Name	Description	Test Step Outcome	Comments
1. IZ-AD-1.1_Send_V04_222	Tests the ability to create a valid VXU^04 message	Failed	

Below the table, there are tabs for Validation, Report, Profile Viewer, ValueSets, Test Story, Test Data Specification, Message Content, and Example Message. The Validation tab is selected. A large central window shows the **Message Content** pane with a large amount of XML code. At the bottom of this pane is the **Message Validation Result** pane, which displays the following information:

Message Validation Result (Help)

3 Errors, 10 Warnings, 55 Alerts

All Value Set Content Failure Coded Element

Highlight All

Path **Description** **Line #**

- RXR[3]-2[1].3 The value 'HL7016' at location Component RXR-2.3 (Name of Coding System) is not member of the value set HL70396_IZ 26
- OBX[15]-2[1].1 Content - invalid content (based on test case fixed data). The value '253088698300012711120420' at 'Component OBX-5.1 (Identifier)' does not match the expected value '25308869830001581115105'. 29
- RXR[3]-2[1].3 Invalid Code System. Expected: 'HL70163', Found: 'HL7016' 26

A callout box labeled 28 points to the **Message Validation Result** pane with the text: "View the results displayed in the **Message Validation Result** window."

Context-based Test Step Level Testing – Message Validation (3)

29

Open the **Test Step Outcome** dropdown menu and select an option to enter a test step outcome that is different from the automatic validation result.

Passed
Passed – Notable Exception
Failed
Failed – Not Supported
Incomplete
Inconclusive

Screenshot of the HL7 Context-based Test Selection interface showing the 'Test Step Outcome' dropdown and message validation results.

The screenshot shows the following interface elements:

- Top Navigation:** Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based (selected), Documentation, About, Hello Guest.
- Breadcrumbs:** ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child / IZ-AD-1_Send_V04_Z22
- Test Selection:** Current Test Step: IZ-AD-1_1_Send_V04_Z22
- Test Step Outcome:** Failed (highlighted by a red box). Other options include Passed, Passed – Notable Exception, Failed, Failed – Not Supported, Incomplete, and Inconclusive.
- Message Tree:** Shows a hierarchical tree of HL7 segments and components.
- Message Content:** Displays the HL7 message structure with various segments like MSH, PID, OBX, ORC, RXA, and OBX.
- Validation Result:** Shows the following counts:
 - 3 Errors
 - 10 Warnings
 - 55 Alerts

Buttons: Validate, Load Example, Browse, Clear.
- Message Validation Result:** A table showing validation errors:

Path	Description	Line #
RXR[3]-2[1].3	The value 'HL7016' at location Component RXR-2.3 (Name of Coding System) is not member of the value set HL70396_IZ	26
OBX[15]-5[1].1	Content - Invalid content (based on test case fixed data). The value '253088698300012711120420' at 'Component OBX-5.1 (Identifier)' does not match the expected value '253088698300015811151105'.	29
RXR[3]-2[1].3	Invalid Code System. Expected: 'HL70163', Found: 'HL7016'	26

Context-based Test Step Level Testing – Message Validation (4)

30 Option selected from the **Test Step Outcome** dropdown menu displays in the Test Step Outcome field.

31 Click on the icon to add **Test Step-specific Comments** to the Validation Report

32 Click on the icons to accept/delete the Test Step-specific Comments.

33 Click on the icons to append more Comments/to delete all of the Comments that were accepted.

The screenshot shows the HL7 Context-based Test Selection interface. At the top, there are tabs for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-based (selected), Documentation, and About. A user 'Hello Guest' is logged in. Below the tabs, the URL is 'ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child / IZ-AD-1.1_Send_V04_Z22'. The main content area displays a table of test steps:

Name	Description	Test Step Outcome	Comments
→ 1. IZ-AD-1.1_Send_V04_Z22	Tests the ability to create a valid VXU^V04 message	Inconclusive	

Below the table are buttons for Validation, Report, Profile Viewer, ValueSets, Test Story, Test Data Specification, Message Content, and Example Message. A 'Download' button is also present. The 'Message Tree' section lists various HL7 message components. The 'Message Content' section shows a large list of HL7 messages with detailed fields like MSH, PID, PT1, PTD, PO1, NK1, ORC, RXA, OBX, and RXR. The 'Comments' section at the bottom contains a box for 'Test Step-specific comments' with acceptance/rejection buttons. A note indicates that the value 'HL7016' is not a member of the value set HL70396_IZ.

Context-based Test Step Level Testing – Validation Report (1)

34

Click on **Report** tab to view the validation report

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based Documentation About Hello Guest

Test Selection Test Execution Current Test Step: IZ-AD-1.1_Send_V04_Z22

ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child / IZ-AD-1.1_Send_V04_Z22

Name	Description	Test Step Outcome	Comments
1. IZ-AD-1.1_Send_V04_Z22	Tests the ability to create a valid VXU^V04 message	Inconclusive	Test Step-specific comments

Validation Report Profile Viewer ValueSets Test Story Test Data Specification Message Content Example Message

Download

Download As ▾

I - Test Step Validation Report 02 22 2018, 18:47:26.724-05:00

Name	IZ-AD-1.1_Send_V04_Z22
Validation Type	
Test Step Type	SUT_INITIATOR
Message Validation Result	Failed
Test Step Outcome	Inconclusive
Comments	Test Step-specific comments

Message Validation Report 02 22 2018, 17:38:40.192-05:00

Validation Type	Context-Based
Testing Tool	Name: NIST Validation Tool Validation Version: 1.2.2
Test Case	Test Plan: ONC 2015 Test Plan Test Group: Administration Group Test Case: IZ-AD-1_Admin_Child Test Step: IZ-AD-1.1_Send_V04_Z22

37

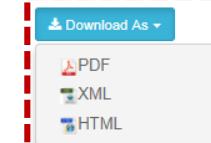
View the Test Step-specific Comments entered by the Tester.

36

View the different Test Step Outcome selected from the dropdown menu by the Tester.

38

Click on Download As to select one of the Report format options from the dropdown menu.



35 View Message Validation Result generated automatically by the Tool.

Context-based Test Step Level Testing – Validation Report (2)

The screenshot displays a web application for test validation. On the left, a sidebar shows navigation links like Home, SOAP Envelope, SOAP Connectivity, Test Selection, Test Execution, and a current test step. Below this are sections for the ONC 2015 Test Plan, Administration Group, and a specific test step (IZ-AD-1_Admin_Child). A toolbar at the top of the sidebar includes Validation, Report, Profile Viewer, and ValueSets buttons.

The main content area contains two validation reports:

- 1 - TestStep Validation Report** (circled in red):
 - Name: IZ-AD-1.1_Send_V04_Z22
 - Validation Type: Context-Based
 - Test Step Type: SUT_INITIATOR
 - Message Validation Result: Failed
 - Test Step Outcome: Inconclusive
 - Comments: Test Step-specific comments
- Message Validation Report**:
 - Validation Type: Context-Based
 - Testing Tool: NIST Validation Tool, Version 1.2.2
 - Test Case: Test Plan: ONC 2015 Test Plan; Test Group: Administration Group; Test Case: IZ-AD-1_Admin_Child; Test Step: IZ-AD-1.1_Send_V04_Z22
 - Profile: Name: Unsolicited Immunization Update; Organization: NIST; Type: Constrainable; Profile Version: 1.0.1; Profile Date: 20160328
 - Message:

```
MSH|^~\&|NISTEHRFAC|NISTEHRFAC|NISTIISAPP|NISTIISFAC|20150624073733.994-0500||VXU^V04^VXU_V04|NIST-IZ-AD-1.1_Send_V04_Z22|P|2.5.1||||ERIAL||||Z22^CDCPHINVS|NISTEHRFAC|NISTIISFAC
PID|1||3123^^NIST-MPI-1^MR||richardson^Russell^Clinton^L|Billington^^^^^M|20150415|M||1
002-5^American Indian or Alaska Native^CDCREC|543 Blount Drive^Bozeman^MT^59715^USA^P||^P
RN^PH^406^5557690|||||||2186-5^Not Hispanic or Latino^CDCREC|N|1||||IN
```

On the right, a sidebar titled "Report" includes "Test Step-specific comments" with edit and save icons, and download buttons for PDF, XML, and HTML formats. Other sidebar options include Test Data Specification, Message Content, and Example Message.

**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

Context-Based Test Case Level Testing Without Automated Transport Demonstration

Disable Transport – Accessing the Configuration Screen

NIST Immunization Test Suite 1.8.0

From the Hello Guest dropdown menu, click on Transport Settings.

The screenshot shows the NIST Immunization Test Suite homepage. At the top right, there is a 'Hello Guest' dropdown menu. A callout bubble with the number '1' points to the 'Transport Settings' option in this menu. The main content area includes sections for Supporting, 2015 ONC Health IT Certification, Have a Question?, and Supported Browsers. Below the main content are four icons for testing: SOAP Envelope, SOAP Connectivity, HL7 Context-free, and HL7 Context-based. A large diagram at the bottom illustrates the testing process for ONC 2015 Certification, showing a flow from envelope testing through various transport and content validation steps.

Disable Transport – Using the Configuration Screen

2

On the **SOAP Configuration** screen, make sure the **Transport** is set to **Off**.

The screenshot shows a navigation bar with links: Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, and About. The user is logged in as 'Hello Guest'. Below the navigation bar, there is a section titled 'Transport' with two buttons: 'On' (light blue) and 'Off' (dark blue). A callout bubble labeled '2' points to the 'Off' button. Another callout bubble labeled '3' points to a message box stating 'A message displays to confirm that Transport is currently disabled.' Above the message box, the text 'Transport is disabled' is highlighted in red.

info

The **automated transport** capability allows HIT Modules that are being tested to communicate automatically with the NIST Tool, transmitting messages for the **Context-based Test Cases** in the NIST Immunization Test Suite via the SOAP protocol.

This feature is not required for 2015 ONC Health IT Certification testing; however, a Tester may choose to use this feature for that testing.

The **automated transport** capability can only be used at the **Test Case** level, **NOT AT THE TEST STEP LEVEL**.

Context-based Test Case Level Testing – Transport Disabled

Objectives

- Locate the **HL7 Context-based** option on the Menu Bar.
- Locate Test Cases in the Test Cases navigation bar.
- Access Test Case-specific information via the corresponding tabs.
- Load a Test Case and execute the validation process without automated transport.

Informative Reference

The **HL7 Context-based** option provides HL7 v2 immunization message testing capabilities using specific test scenarios and the message validation engine.

4

Select **HL7 Context-based** from the Menu Bar.

5

Arrow-down in the **Test Cases** navigation bar on the **Test Selection function** screen to open and display the Test Cases for the desired **Group**. Select a **Test Case**.

The screenshot shows the HL7 Context-based interface. At the top, there's a navigation bar with links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based (which is highlighted), Documentation, About, and Hello Guest. Below the navigation bar, the 'Test Selection' link is circled in red. The main area shows a 'Test Plan Type' dropdown set to 'Public' and a 'Test Plan' dropdown set to 'ONC 2015 Test Plan'. On the left, a 'Test Cases' sidebar lists groups like 'ONC 2015 Test Plan' and 'Administration Group', with 'IZ-AD-1_Admin_Child' selected and highlighted in yellow. In the center, a 'TestCase: IZ-AD-1_Admin_Child' window is open. It displays a 'Test Story' tab and several tabs at the bottom: FULL (selected), Description, Comments, Pre Condition, Post Condition, Test Objectives, Evaluation Criteria, and Notes for Testers. The 'Description' tab contains the text: 'A child (infant) is seen at a clinic. Historical vaccinations are recorded and new vaccines are administered and documented.' The 'Comments' tab says 'No Comments'. The 'Pre Condition' tab says 'No PreCondition'. The 'Post Condition' tab says 'No PostCondition'. The 'Test Objectives' tab says 'This test case assesses the ability of the EHR to create an administration message containing historical and new administrations for a child including next of kin, patient consent, VIS, funding source and VFC data.' The 'Evaluation Criteria' tab is empty. The 'Notes for Testers' tab says 'No Note'.

6 View the **Test Story** displayed in the TestCase window for the selected Test Case. The **Full** tab is selected automatically for display of all sections of the Test Story.

7 Select the tab for each section to view just the specified information, e.g., **Notes for Testers**.

8 Click on **Download PDF** button to obtain the **Test Story** document.

9 Select **Load Test Case**

Context-based Test Case Level Testing – Transport Disabled (2)

The screenshot shows the ONC 2015 Test Plan application interface. At the top, there's a navigation bar with links for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-based, Documentation, and About. Below the navigation bar, the current test case is identified as IZ-AD-1_Admin_Child. The main content area has a title 'Test Steps Execution' and displays two test steps in a table:

Name	Description	Test Step Outcome	Comments	Report
→ 1. IZ-AD-1_1_Send_V04_Z22	Tests the ability to create a valid VXU\V04 message			
← 2. IZ-AD-1_2_Receive_ACK_Z23	Tests the ability to consume a valid ACK message	Not started		

Below the table, there are tabs for Validation, Report, Profile Viewer, and ValueSets. A 'Message Tree' section is also visible. On the right side of the interface, there's a 'Test Result' panel with fields for Test Status (In Progress), Test Case Result (Not Available), Comments, and Test Case Report. A 'Transport' section shows it is disabled (Off). At the bottom, there are tabs for Test Story, Test Data Specification, Message Content, and Example Message, along with buttons for Validate, Load Example, Browse, and Clear.

info The name of the **Test Case** appears at the top of the **Test Execution** screen.

10 Confirm that Transport is disabled (Transport also can be disabled or enabled here).

info The names of the **Test Steps** appear here.

11 Click on these tabs to view information from the **Test Execution** screen (see detailed explanations for these features in the **Context-based Test Step Level Testing Demonstration** section of this Tutorial) ...then click on the **Validation** tab to return to the Validation function.

12 Load the message for this **Test Step** into the **Message Content** window.

Context-based Test Case Level Testing – Transport Disabled (3)

13

Click the **Validate** button to initiate validation by the Tool.

14

Validation result produced by the Test Tool for this **Test Step** displays automatically in the **Test Step Outcome** field. Use the **Test Step Outcome** dropdown menu to enter a test step outcome that is different from the automatic validation result if necessary.



Add Test Step-specific Comments via the icon.



Use **Download** button in **Report** column for quick download/view/print capability.

The screenshot shows the HL7 Context-based Test Selection interface. At the top, there are tabs for Home, SOAP Envelope, SOAP Connectivity, HL7 Context-based, HL7 Context-based (selected), Documentation, and About. Below the tabs, the URL is ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child. The main area is titled 'Test Steps Execution' and lists two test steps:

Name	Description	Test Step Outcome	Comments	Report
1. IZ-AD-1_Send_V04_222	Tests the ability to create a valid VU/VG message	Failed		
2. IZ-AD-12_Receive_ACK_233	Tests the ability to consume a valid ACK message	Not started		

Step 13 is highlighted with a yellow box and a callout pointing to the 'Report' column. Step 14 is highlighted with a yellow box and a callout pointing to the 'Test Step Outcome' dropdown. Step 15 is highlighted with a yellow box and a callout pointing to the 'Message Validation Result' window. Step 16 is highlighted with a yellow box and a callout pointing to the 'Report' tab. Step 17 is highlighted with a yellow box and a callout pointing to the 'Next' button.

Message Tree (left pane): A tree view of HL7 messages, mostly IHE XDS messages.

Message Content (center pane): A large text area showing HL7 message content. A callout from step 17 points to the bottom right of this pane.

Message Validation Result (bottom pane): A table showing validation results. It has columns for Path, Description, and Line #. It shows errors related to component RXA-5.1 being a member of value sets NDC_Use or NDC_Sale, invalid content for VU/VG messages, and invalid code system values.

15

View detailed validation results in the **Message Validation Results** window.

16

Click on the **Report** tab or the **Report** button to view and generate the **Validation Result Report** for this **Test Step**.

Context-based Test Case Level Testing – Transport Disabled (4)

18

The Tool-supplied test message loads automatically into the **Message Content** window; import this message into the System Under Test.

19

Click on the **Juror Document** tab and download/print the document to perform inspection/manual validation for processing of the message by the System Under Test.

info

Test Status displays "In Progress" and **Test Case Result** displays "Not Available" until **Test Summary** button is clicked.

20

Select the **Test Step Outcome** for this Test Step from the **Test Step Outcome** dropdown menu.

The screenshot shows the HL7 Context-based Test Execution interface. At the top, there's a navigation bar with links like Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, and About. Below that is a breadcrumb trail: ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child. The main area has tabs for Test Steps Execution, Test Result, and Validation. In the Test Steps Execution tab, there are two rows of test steps:

Name	Description	Test Step Outcome	Comments	Report
→ 1. IZ-AD-1_1_Send_V04_Z22	Tests the ability to create a valid VXU/V04 message	Failed		Download
← 2. IZ-AD-1_2_Receive_ACK_Z23	Tests the ability to consume a valid ACK message	Passed		Download

To the right of the table is a 'Test Result' panel with sections for Test Status (In Progress), Test Case Result (Not Available), and Transport (disabled). Below the table is a 'Validation' tab with a 'Message Tree' section showing MSH and MSA messages. The 'Message Content' tab shows the message text: MSH|^~\&|NISTIISAPP|NISTIISFAC|NISTEHRAPP|NISTEHRFAC|20150627073734.034-0500||ACK^V04^ACK|NIST-IZ-AD-1_2_Receive_ACK_Z23|P|2.5.1|||NE|NE|||Z23^CDCPHINVS|NISTIISFAC|NISTEHRFAC. The 'Validation Result' section shows 0 Errors, 1 Warnings, and 9 Alerts, with a note: 'No errors found.'

Step 21 is highlighted in a yellow box at the bottom left: "Click on the Report tab or the Report button to view and generate the Validation Result Report for this Test Step." Step 22 is highlighted in a yellow box in the center: "Click on the Test Summary button to complete the testing for this Test Case". Step 19 is also highlighted in a yellow box at the top right.

21

Click on the **Report** tab or the **Report** button to view and generate the **Validation Result Report** for this Test Step.

22

Click on the **Test Summary** button to complete the testing for this Test Case

Context-based Test Case Level Testing – Transport Disabled (5)

23 Keep the **Test Case Result** that is displayed, or **override** this result by selecting a different Test Case Result from the **dropdown menu**.

info When **Test Summary** is selected, **Test Status** displays “Complete” and **Test Case Result** displays the lowest result value applied to one of the Test Steps.

24 Click on the **+** icon to add **Test Case**-specific testing **Comments** to the **Test Summary** as necessary.

25 Click on the **Download** button to select/view/print one of the Report format options from the **dropdown menu**.

The screenshot shows the ONC 2015 Test Plan interface. At the top, there's a navigation bar with links like Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, About, and a user session indicator. Below the navigation is a breadcrumb trail: ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child. The main content area has two tables: 'Test Steps Result' and 'Test Results'. The 'Test Steps Result' table lists two test steps: '1. IZ-AD-1_1_Send_V04_Z22' (Failed) and '2. IZ-AD-1_2_Receive_AOK_Z23' (Passed). The 'Test Results' table shows 'Test Status' as 'Completed', 'Test Case Result' as 'Failed', and a 'Comments' field with a plus sign. Below these tables is a section for 'Transport' with a switch set to 'Off' and a note 'Transport is disabled'. At the bottom right, a 'Download' button dropdown menu is open, showing options: As PDF, As HTML, and As XML.

Context-based Test Case Level Testing – Test Summary

info

The **Test Summary** report includes **Test Case Level** information as well as **Test Step Level** information for each Test Step executed..

This screenshot shows the 'Test Steps Result' section of the ONC 2015 Test Plan. It lists two test steps:

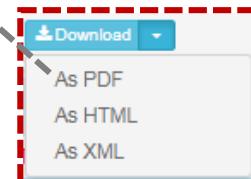
Name	Description
→ 1 IZ-AD-1.1_Send_V04_Z22	Tests the ability to create a valid message.
← 2 IZ-AD-1.2_Receive_ACK_Z23	Tests the ability to consume a valid message.

This screenshot displays two validation reports. The top report is the 'Test Case Validation Report' for 03 16 2018, 18:02:24.677-04:00, with a 'Validation Type' of 'Context-Based' and an outcome of 'Failed'. The bottom report is the '1 - TestStep Validation Report' for 03 16 2018, 18:02:24.721-04:00, for the step IZ-AD-1.1_Send_V04_Z22, with a 'Validation Type' of 'SUT_INITIATOR' and an outcome of 'Failed'. Both reports include sections for 'Comments' and 'Profile' information, and a large 'Message' section containing HL7 message content.

info

The **Result** listed for the **Test Case Validation Report** section in the **Test Summary** is derived from the lowest Result associated with any of the **Test Steps** included in the Test Case unless the Tester **overrides** the **Test Case Result** after clicking the **Test Summary** button.

This screenshot shows the 'Test Result' summary page. It displays the 'Test Status' as 'Completed', the 'Test Case Result' as 'Failed' (with a dropdown menu), and a 'Comments' field. A 'Test Case Report' section with a 'Download' button is also present. Below the main summary, there is a note about transport settings: 'Transport is disabled' with 'On' and 'Off' buttons.



**HEALTH IT
STANDARDS TESTING INFRASTRUCTURE**

Context-Based Test Case Level Testing With Automated Transport Demonstration

Transport Settings – Creating an Account (1)

1

Click on **Hello Guest** to display the dropdown menu, then click on the **Register** option to create a user Account with the Username and Password

NIST Immunization Test Suite 1.8.0

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based Documentation About Hello Guest ▾

Welcome to the NIST Immunization Test Suite!

Supporting
The NIST Immunization Test Suite supports a broad range of testing in support of the immunization Community, including transport, messaging (content), and functional.

- CDC SOAP Validation
- HL7 V2.5.1 Immunization Message Implementation Guide Release 1.5
- EHR and IIS Functional Capabilities (2016)
- 2015 ONC Health IT Certification

2015 ONC Health IT Certification
► Start ONC Testing
The NIST Immunization Test Suite is a test tool used for certifying ONC 2015 Edition Health IT Modules. The NIST capability used for ONC Certification can be accessed by navigating to the ONC 2015 Test Plan via the HL7 Context-based option. The ONC 2015 Test Plan is used to certify Modules for the §170.315(f)(1) Transmission to Immunization Registries ONC criterion.

Have a Question?
A Google Group ([HL7v2 Immunization Testing](#)) has been established for discussion/questions about the Implementation Guide, testing tool, and testing issues. No membership is required. A Google account is required for posting. **Note:** The same Google Group is being used for submitting questions/comments related to the 2014 and 2015 Editions of the NIST Certification Test Tool and general Immunization related topics. **When asking questions, please specify the edition of the tool and version of the standard to which the questions apply.**

Supported Browsers
The following browsers are recommended:

- Chrome (Recommended)
- Firefox (Recommended)
- Safari
- IE 9+

Login
Register
Reset Password
Transport Settings
Validation Settings

info

The **automated transport** capability allows HIT Modules that are being tested to communicate automatically with the NIST Tool, transmitting messages for the **Context-based Test Cases** in the NIST Immunization Test Suite via the SOAP protocol.

This feature is not required for 2015 ONC Health IT Certification testing; however, a Tester may choose to use this feature for that testing.

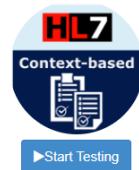
The **automated transport** capability can only be used at the **Test Case** level, **NOT AT THE TEST STEP LEVEL**.



►Start Testing



►Start Testing



►Start Testing

Transport Settings – Creating an Account (2)

2

Once the **Register** option is selected, the **Create Account** screen displays.

The screenshot shows the 'Create Account' page. At the top, there is a navigation bar with links: Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free (selected), HL7 Context-based, Documentation, and About. On the right, it says 'Hello Guest'. Below the navigation bar, the page title 'Create Account' is displayed. There are five input fields for Name, Email, Username, Password, and Confirm Password. To the right of these fields is a callout box with step 3: 'Enter the requested information into the provided fields.' Below the input fields is a 'Notice to Applicant Regarding Tool Terms of Use' section containing a long text about the tool's terms and NIST's role. Step 4 points to this section with the instruction 'Read the Notice to Applicant.'. A checkbox labeled 'I have read the Notice to Applicant and Accept the Terms of Use for the Immunization Tool' is present. Step 5 points to this checkbox with the instruction 'Check the box to indicate you have read the Notice to Applicant and accept the Terms of Use.' At the bottom left is a 'Submit Application' button, which is highlighted by step 6 with the instruction 'Click on the Submit Application button.'

3 Enter the requested information into the provided fields.

4 Read the **Notice to Applicant**.

5 Check the box to indicate you have read the Notice to Applicant and accept the Terms of Use.

6 Click on the **Submit Application** button.

Logging in to the Test Suite with a User Account

7 Click on **Hello Guest** to display the dropdown menu, then click on the **Login** option

NIST Immunization Test Suite 1.8.0

Welcome to the NIST Immunization Test Suite!

Supporting

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- HL7 V2.5.1 Immunization Message Implementation Guide Release 1.5
- EHR and IIS Functional Capabilities (2016)
- 2015 ONC Health IT Certification

2015 ONC

Start ONC Testing

The NIST Immunization Test Suite is for certifying the NIST can be accessed via the 2015 Test Plan via the §170.315(f) Registries C

Login

Please enter your username and password.

Username:

Password:

Login **Cancel**

I forgot my password
Create an account.

Supported Browsers

The following browsers are recommended:

- Chrome (Recommended)
- Firefox (Recommended)
- Safari
- IE 9+

SOAP Envelope

Start Testing

SOAP Connectivity

Start Testing

HL7 Context-free

Start Testing

HL7 Context-based

Start Testing

8 Enter the **Username** and **Password** and click **Login**.

Transport Settings – Accessing the Configuration Screen

9

From the **Hello Guest** dropdown menu, click on **Transport Settings**.

NIST Immunization Test Suite 1.8.0

Home 1 SOAP Envelope 2 SOAP Connectivity 3 HL7 Context-free 4 HL7 Context-based Documentation About Hello Guest ▾

Welcome to the NIST Immunization Test Suite!

Supporting
The NIST Immunization Test Suite supports a broad range of testing in support of the immunization Community, including transport, messaging (content), and functional.

- CDC SOAP Validation
- HL7 V2.5.1 Immunization Message Implementation Guide Release 1.5
- EHR and IIS Functional Capabilities (2016)
- 2015 ONC Health IT Certification

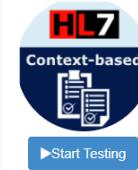
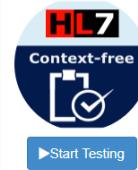
2015 ONC Health IT Certification
▶ Start ONC Testing
The NIST Immunization Test Suite is a test tool used for certifying ONC 2015 Edition Health IT Modules. The NIST capability used for ONC Certification can be accessed by navigating to the ONC 2015 Test Plan via the HL7 Context-based option. The ONC 2015 Test Plan is used to certify Modules for the §170.315(f)(1) Transmission to Immunization Registries ONC criterion.

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Supported Browsers
The following browsers are recommended:

- Chrome (Recommended)
- Firefox (Recommended)
- Safari
- IE 9+

Login Register Reset Password Transport Settings Validation Settings



Transport Settings – Using the Configuration Screen

10

Once the Transport Settings option is selected, the **SOAP Configuration** screen displays.

11

Select **On** to enable Transport.

info

The **Sender** is the HIT Module that initiates the transactions to the NIST Tool. The **Sender** (SUT) must be provided with certain information to enable it to know where/how to transmit the immunization messages to the NIST Tool. Most of the **Sender** fields are populated automatically by the NIST Tool.

info

The **Receiver** is the HIT Module that receives transactions initiated by the NIST Tool. (Currently, the Context-based validation does not include a Test Plan where the NIST Tool initiates transactions, so the **Receiver** fields should be left blank when using Transport for Context-based validation.)

When the NIST Tool is the initiator, certain **Receiver** (SUT) information must be provided to enable the NIST Tool to know where/how to transmit the immunization messages to the SUT. The **Receiver** fields are populated manually.

info

When the VXU or QBP message is transmitted from the SUT to the Tool, the Tool automatically obtains the SUT's Endpoint url for transmitting the corresponding ACK and RSP messages back to the SUT.

12

- **Username** and **Password** are populated automatically based on the information the user enters into their Account.
- Enter **FacilityID** (optional field) if required by the Sender system (the SUT).
- **Endpoint** and **WSDL** are populated with NIST Assigned information.

13

13

The **Receiver/SUT Information** should be entered in these fields only for Test Cases where the NIST Tool is the initiator of transactions.

14

Click **Save** to keep the information.

Context-based Test Case Level Transport Enabled (1)

Objectives

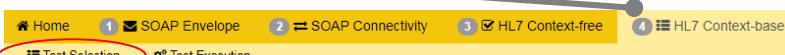
- Locate the **HL7 Context-based** option on the Menu Bar.
- Locate Test Cases in the Test Cases navigation bar.
- Access Test Case-specific information via the corresponding tabs.
- Load a Test Case and execute the validation process with automated transport.

Informative Reference

The **HL7 Context-based** option with automated transport provides HL7 v2 immunization message testing capabilities using specific test scenarios and the message validation engine plus the ability to communicate automatically with the NIST Tool, transmitting messages for the Context-based Test Cases in the NIST Immunization Test Suite via the SOAP protocol.

15

Select **HL7 Context-based** from the Menu Bar.



16

Arrow-down in the **Test Cases** navigation bar on the **Test Selection** function screen to open and display the Test Cases for the desired Group. Select a **Test Case**.

A screenshot of the 'Test Selection' function screen. On the left, there's a tree view of 'Test Plan Type: Public' and 'Test Plan: ONC 2015 Test Plan'. Under 'Administration Group', the 'IZ-AD-1_Admin_Child' node is selected and highlighted in yellow. On the right, there's a 'Test Story' section for 'TestCase: IZ-AD-1_Admin_Child'.

17

View the **Test Story** displayed in the **TestCase** window.

18

Click on **Download PDF** button to obtain the **Test Story** document.

A screenshot of the 'TestCase' window for 'IZ-AD-1_Admin_Child'. It shows a 'Test Story' tab with several tabs at the top: FULL, Description, Comments, Pre Condition, Post Condition, Test Objectives, Evaluation Criteria, and Notes for Testers. The 'Description' tab is active, displaying the narrative: 'A child (infant) is seen at a clinic. Historical vaccinations are recorded and new vaccines are administered and documented.' An 'info' icon is shown above the 'Comments' section, which contains 'No Comments'. The 'Pre Condition' section contains 'No PreCondition'. The 'Post Condition' section contains 'No PostCondition'. The 'Test Objectives' section contains 'This test case assesses the ability of the EHR to create an administration message containing historical and new administrations for a child including next of kin, patient consent, VIS, funding source and VFC data.'. The 'Evaluation Criteria' and 'Notes for Testers' sections both contain 'No Note'. A 'Download PDF' button is located at the bottom right of the window.

The **Test Story** provides a narrative **Description** about the context of the Test Case. **Comments**, **Precondition**, **Post condition**, **Test Objectives**, **Evaluation Criteria**, and **Notes for Testers** are included with the Test Story.

Context-based Test Case Level Transport Enabled (2)

20

Selecting Load Test Case causes the **Test Steps Execution** table to display.

The screenshot shows the HL7 Context-based interface with the following components:

- Top Navigation Bar:** Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, About.
- Breadcrumbs:** ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child.
- Test Steps Execution Table:** Shows two test steps:
 - Row 1:** Name: IZ-AD-1_1_Send_V04_Z22; Description: Tests the ability to create a valid VXLU\VO4 message; Transport Status: Waiting for message...; Test Step Outcome: Not started; Comments: None; Report: None.
 - Row 2:** Name: IZ-AD-1_2_Receive_ACK_Z23; Description: Tests the ability to consume a valid ACK message; Transport Status: Not started; Test Step Outcome: Not started; Comments: None; Report: None.
- Transport Control Panel:** Status: In Progress; Test Case Result: Not Available; Comments: None; Test Case Report: None. It includes a **Reset** button.
- Action Buttons:** Transport (On/Off), Protocol (SOAP), Action (2mn Listen Stop).
- Message Tree:** Shows a tree structure with nodes like IZ-AD-1_1_Send_V04_Z22.
- Message Content:** A text area containing the number '1'.
- Validation:** Message Validation Result checkbox.
- IZ-AD-1_1_Send_V04_Z22 - Console:** A log window showing the following text:

```
03/14/2016 - 15:16:39:Starting Listener. Please wait...
03/14/2016 - 15:16:39:Listener started.
03/14/2016 - 15:16:40:Waiting for Inbound Message... Elapsed time(second):1s
03/14/2016 - 15:16:41:Waiting for Inbound Message... Elapsed time(second):1s
03/14/2016 - 15:16:42:Waiting for Inbound Message... Elapsed time(second):3s
03/14/2016 - 15:16:43:Waiting for Inbound Message... Elapsed time(second):4s
03/14/2016 - 15:16:44:Waiting for Inbound Message... Elapsed time(second):3s
03/14/2016 - 15:16:45:Waiting for Inbound Message... Elapsed time(second):1s
03/14/2016 - 15:16:46:Waiting for Inbound Message... Elapsed time(second):7s
03/14/2016 - 15:16:47:Waiting for Inbound Message... Elapsed time(second):8s
```

21

Transport is enabled (Transport also can be disabled here).

26

Select 'Reset' to re-start a Listening session.

22

First test step is selected automatically; **Transport Status** is "Waiting for message...".

23

Select **Listen** to initiate transport, and the table below is displayed. The Listener listens for 30 seconds.

24

Select **Stop** to cancel Listening.

25

Click **Close** once the Listener has completed.

Context-based Test Case Level Transport Enabled (3)

27

Validation result produced by the Test Tool for this **Test Step** displays automatically in the **Test Step Outcome** field. Use the **Test Step Outcome** dropdown menu to enter a test step outcome that is different from the automatic validation result if necessary.

Add **Test Step-specific Comments** via the  icon

int

Use **Download** button in **Report** column for quick download/view/print capability

Test Steps Execution

Name	Description	Transport Status	Test Step Outcome	Comments	Report
→ 1. IZ-AD-1.1_Send_V04_Z22	Tests the ability to create a valid VXU\VO4 message	Completed	Passed		Download
← 2. IZ-AD-1.2_Receive_ACK_Z23	Tests the ability to consume a valid ACK message	Not started	Not started		

Test Result

Test Status	In Progress
Test Case Result	Not Available
Comments	
Test Case Report	

Transport

Protocol: SOAP
Action: 2mn Listen Stop

Validation **Report** **Profile Viewer** **ValueSets**

Message Tree

- MSH|^~\&|NISTEHRAFAC|NISTIIAPP|NISTIIIFAC|20150624073733.994-0500||VXU\VO4\|XU_V04|NIST-IZ-AD-1.1_Send_V04_Z22|||2.5.1||ER|AL|||||222^CDCPHINVS|NISTEHRAFAC|NISTIIIFAC
- PID|1|Patient Identification R[1,1]
- PDT|1|Patient Addition Demographic RE[0,1]
- NK1|1|Next of Kin / Associated Parties RE[0,1]
- NK1|2|Next of Kin / Associated Parties RE[0,1]
- ORC|1|Common Order R[1,1]
- RXA|1|Pharmacy/Treatment Administration R[1,1]
- RXR|1|Pharmacy/Treatment Route RE[0,1]
- OBX|1|Observation/Result R[1,1]
- OBX|2|Observation/Result R[1,1]
- OBX|3|Observation/Result R[1,1]
- OBX|4|Observation/Result R[1,1]
- OBX|5|Observation/Result R[1,1]
- OBX|6|Observation/Result R[1,1]
- OBX|7|Observation/Result R[1,1]
- OBX|8|Observation/Result R[1,1]
- ORC|2|Common Order R[1,1]
- RXA|2|Pharmacy/Treatment Administration R[1,1]
- RXR|2|Pharmacy/Treatment Route RE[0,1]
- OBX|9|Observation/Result R[1,1]
- OBX|10|Observation/Result R[1,1]
- OBX|11|Observation/Result R[1,1]
- OBX|12|Observation/Result R[1,1]
- ORC|3|Common Order R[1,1]
- RXA|3|Pharmacy/Treatment Administration R[1,1]

Message Content

```
1 MSH|^~\&|NISTEHRAFAC|NISTIIAPP|NISTIIIFAC|20150624073733.994-0500||VXU\VO4\|XU_V04|NIST-IZ-AD-1.1_Send_V04_Z22|||2.5.1||ER|AL|||||222^CDCPHINVS|NISTEHRAFAC|NISTIIIFAC
  2 PID|1|Patient Identification R[1,1]
  3 PDT|1|Patient Addition Demographic RE[0,1]
  4 NK1|1|Next of Kin / Associated Parties RE[0,1]
  5 NK1|2|Next of Kin / Associated Parties RE[0,1]
  6 ORC|1|Common Order R[1,1]
  7 RXA|1|Pharmacy/Treatment Administration R[1,1]
  8 RXR|1|Pharmacy/Treatment Route RE[0,1]
  9 OBX|1|Observation/Result R[1,1]
  10 OBX|2|Observation/Result R[1,1]
  11 OBX|3|Observation/Result R[1,1]
  12 OBX|4|Observation/Result R[1,1]
  13 OBX|5|Observation/Result R[1,1]
  14 OBX|6|Observation/Result R[1,1]
  15 OBX|7|Observation/Result R[1,1]
  16 OBX|8|Observation/Result R[1,1]
  17 ORC|2|Common Order R[1,1]
  18 RXA|2|Pharmacy/Treatment Administration R[1,1]
  19 RXR|2|Pharmacy/Treatment Route RE[0,1]
  20 OBX|9|Observation/Result R[1,1]
  21 OBX|10|Observation/Result R[1,1]
  22 OBX|11|Observation/Result R[1,1]
  23 OBX|12|Observation/Result R[1,1]
  24 ORC|3|Common Order R[1,1]
  25 RXA|3|Pharmacy/Treatment Administration R[1,1]
```

Message Validation Result

0 Errors 10 Warnings 55 Alerts

No errors found.

info Validation occurs automatically when message is received.

Test Steps Execution

Name	Description	Transport Status	Test Step Outcome	Comments	Report
→ 1. IZ-AD-1.1_Send_V04_Z22	Tests the ability to create a valid VXU\VO4 message	Completed	Passed		Download
← 2. IZ-AD-1.2_Receive_ACK_Z23	Tests the ability to consume a valid ACK message	Not started	Not started		

Test Result

Test Status	In Progress
Test Case Result	Not Available
Comments	
Test Case Report	

Transport

Protocol: SOAP
Action: 2mn Listen Stop

Validation **Report** **Profile Viewer** **ValueSets**

Message Tree

- MSH|^~\&|NISTEHRAFAC|NISTIIAPP|NISTIIIFAC|20150624073733.994-0500||VXU\VO4\|XU_V04|NIST-IZ-AD-1.1_Send_V04_Z22|||2.5.1||ER|AL|||||222^CDCPHINVS|NISTEHRAFAC|NISTIIIFAC
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- OBX|2|Observation/Result R[1,1]
- OBX|3|Observation/Result R[1,1]
- OBX|4|Observation/Result R[1,1]
- OBX|5|Observation/Result R[1,1]
- OBX|6|Observation/Result R[1,1]
- OBX|7|Observation/Result R[1,1]
- OBX|8|Observation/Result R[1,1]
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- RXR|2|Pharmacy/Treatment Route RE[0,1]
- OBX|9|Observation/Result R[1,1]
- OBX|10|Observation/Result R[1,1]
- OBX|11|Observation/Result R[1,1]
- OBX|12|Observation/Result R[1,1]
- ORC|3|Common Order R[1,1]
- RXA|3|Pharmacy/Treatment Administration R[1,1]

Message Content

```
1 MSH|^~\&|NISTEHRAFAC|NISTIIAPP|NISTIIIFAC|20150624073733.994-0500||VXU\VO4\|XU_V04|NIST-IZ-AD-1.1_Send_V04_Z22|||2.5.1||ER|AL|||||222^CDCPHINVS|NISTEHRAFAC|NISTIIIFAC
  2 PID|1|Patient Identification R[1,1]
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  5 NK1|2|Next of Kin / Associated Parties RE[0,1]
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  9 OBX|1|Observation/Result R[1,1]
  10 OBX|2|Observation/Result R[1,1]
  11 OBX|3|Observation/Result R[1,1]
  12 OBX|4|Observation/Result R[1,1]
  13 OBX|5|Observation/Result R[1,1]
  14 OBX|6|Observation/Result R[1,1]
  15 OBX|7|Observation/Result R[1,1]
  16 OBX|8|Observation/Result R[1,1]
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  18 RXA|2|Pharmacy/Treatment Administration R[1,1]
  19 RXR|2|Pharmacy/Treatment Route RE[0,1]
  20 OBX|9|Observation/Result R[1,1]
  21 OBX|10|Observation/Result R[1,1]
  22 OBX|11|Observation/Result R[1,1]
  23 OBX|12|Observation/Result R[1,1]
  24 ORC|3|Common Order R[1,1]
  25 RXA|3|Pharmacy/Treatment Administration R[1,1]
```

Message Validation Result

0 Errors 10 Warnings 55 Alerts

No errors found.

info Validation occurs automatically when message is received.

Context-based Test Case Level Transport Enabled (4)

The screenshot shows the NIST Health IT Standards Testing Infrastructure interface. At the top, there's a navigation bar with links like Home, SOAP Envelope, SOAP Connectivity, HL7 Context-free, HL7 Context-based, Documentation, About, and a Hello Guest dropdown. Below the navigation is a breadcrumb trail: ONC 2015 Test Plan / Administration Group / IZ-AD-1_Admin_Child.

Test Steps Execution: A table showing two test steps. Step 1 (IZ-AD-1_Send_V04_Z22) has a Description of "Tests the ability to create a valid VXU^V04 message", a Transport Status of "Completed", a Test Step Outcome of "Passed", and a Comment field. Step 2 (IZ-AD-1_Receive_ACK_Z23) has a Description of "Tests the ability to consume a valid ACK message", a Transport Status of "Completed", a Test Step Outcome of "Passed", and a Comment field. There are "Download" and "Report" buttons in the Report column for each row.

Test Result: A panel showing the Test Status as "In Progress", Test Case Result as "Not Available", and a Test Case Report section.

Transport: A panel showing the Protocol as "SOAP" and Action as "2mn Listen".

Validation: A panel with tabs for Validation, Report, Profile Viewer, and ValueSets. It shows a Message Tree with entries for MSH[1] and MSA[1].

Message Content: A panel showing a list of messages. Message 1 is MSH|^~\&|NISTIISAPP|NISTIISFAC|NISTEHRAPP|NISTEHRFAC|20150624073734.034-0500|ACK^V04|ACK|NIST-IZ-AD-1.2_Receive_ACK_Z23|P|2.5.1||NE|NE|||Z23^CDCPHINVS|NISTIISFAC|NISTEHRFAC. Message 2 is MSA|AA|NIST-IZ-AD-1.1_Send_V04_Z22.

Message Validation Result: A panel showing 0 Errors, 1 Warnings, and 9 Alerts. It states "No errors found."

Annotations:

- 33**: "Transport Status for the 2nd test step changes to "Completed"."
- 34**: "Select Test Step Outcome from dropdown menu after using Juror Document to verify that system under test processed ACK message properly."
- 35**: "Click Test Summary button to generate the Test Case Report. (See Context-based Test Case Level Transport Disabled for remaining workflow.)"
- Info**: "Add Test Step-specific Comments via the icon."
- Info**: "Use Download button in Report column for quick download/view/print capability."