



HEALTH IT STANDARDS AND TESTING

***Test Tool Orientation for International Society  
for Disease Surveillance (ISDS): 2014 Edition  
§ 170.314(f)(3) Transmission to Public  
Health Agencies - Syndromic Surveillance***

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National Institute of Standards and Technology

# Orientation Session Objectives

- To orient ISDS regarding the § 170.314(f)(3) Transmission to Public Health Agencies - Syndromic Surveillance **Draft** Test Procedure and Conformance Test Tool (**BETA Version**) that will be used for meaningful use stage 2 (MU2) testing
- To help ISDS understand the requirements for MU2 testing related to the § 170.314(f)(3) Transmission to Public Health Agencies - Syndromic Surveillance ONC Criterion
- To obtain ISDS feedback on the Draft Test Procedure
- To obtain ISDS feedback on the use of the NIST Syndromic Surveillance Conformance Test Tool

# Agenda

- Review of current § 170.314(f)(3) Test Procedure
  - Description/discussion of each Test Procedure section
    - Certification Criteria
    - Informative Test Description
    - Referenced Standards
    - Normative Test Procedures
    - Test Data
    - Conformance Test Tools
    - Document History
  - Guidance for using test procedures
- Review of current NIST Syndromic Surveillance Conformance Test Tool
  - Description/demonstration/discussion of the Test Tool
  - Guidance for using the Test Tool
- Questions & Answers
- Next Steps
- Conclusion and Wrap Up

# REVIEW OF CURRENT § 170.314(F)(3) TEST PROCEDURE

## The Test Procedures are used by the accredited testing organizations to develop their test plans and scripts

- A Test Procedure is created for each electronic health record (EHR) certification criterion published by ONC
- The Test Procedures are
  - One component of the EHR certification “test methods”
    - Test procedures
    - Test data
    - Testing tools
  - Based on careful analysis of the verbiage in and intent of each ONC criterion
- Discussions and Q&A sessions between NIST and ONC occur to translate the policy intent of the ONC criteria into test steps and instructions in the Test Procedures
- Each Accredited Testing Lab (ATL) typically develops their testing collateral based on the provided test methods

## The NIST test procedure template provides a standard structure for the content

- Each Test Procedure is organized into the following sections
  - Certification Criteria
  - Informative Test Description
  - Referenced Standards
  - Normative Test Procedures
  - Test Data
  - Conformance Test Tools
  - Document History
- Sections provide traceability to the specific criterion in the ONC Final Rule (FR)
- The § 170.314(f)(3) *Transmission to Public Health Agencies - Syndromic Surveillance* Test Procedure is shown and discussed on the next slides

# Transmission to Public Health Agencies - Syndromic Surveillance Certification Criterion

§170.314(f)(3) Transmission to public health agencies – syndromic surveillance. EHR technology must be able to electronically create syndrome-based public health surveillance information for electronic transmission in accordance with:

(i) Ambulatory setting only.

(A) The standard specified in § 170.205(d)(2).

(B) Optional. The standard (and applicable implementation specifications) specified in § 170.205(d)(3).

(ii) Inpatient setting only. The standard (and applicable implementation specifications) specified in § 170.205(d)(3).

## Standards

§170.205(d)(2) Standard. HL7 2.5.1 (incorporated by reference in § 170.299).

§170.205(d)(3) Standard. HL7 2.5.1 (incorporated by reference in § 170.299). Implementation specifications. PHIN Messaging Guide for Syndromic Surveillance (incorporated by reference in § 170.299) and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance (incorporated by reference in § 170.299).

## **The Certification Criteria section lists the specific criterion and provides information found in the ONC Final Rule about the criterion**

- Certification criterion from the Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition; Revisions to the Permanent Certification Program for Health Information Technology, Final Rule issued by the Department of Health and Human Services (HHS) on September 4, 2012
- Relevant quotes from Section III.A of the preamble of the Final Rule where ONC discusses each of the certification criteria
  - Provide additional information regarding ONC's intent for the criterion
  - Provide ONC responses to feedback about 2014 Edition NPRM criteria
  - Provide explanations and definitions of terms
  - Provide ONC clarifying examples for certain criteria

# Draft 170.314(f)(3) *Transmission to Public Health Agencies - Syndromic Surveillance Test Procedure*

2014 Edition  
Test Procedure for §170.314.f.3 Transmission to public health agencies –  
syndromic surveillance  
For Public Comment ■ September 28, 2012



## Test Procedure for §170.314(f)(3) Transmission to public health agencies – syndromic surveillance

This document describes the test procedure for evaluating conformance of complete EHRs or EHR modules to the certification criteria defined in 45 CFR Part 170 Subpart C of the Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition; Revisions to the Permanent Certification Program for Health Information Technology, Final Rule. The document<sup>1</sup> is organized by test procedure and derived test requirements with traceability to the normative certification criteria as described in the Overview document located at [available when final]. The test procedures may be updated to reflect on-going feedback received during the certification activities.

The HHS/Office of the National Coordinator for Health Information Technology (ONC) has defined the standards, implementation guides and certification criteria used in this test procedure. Applicability and interpretation of the standards, implementation guides and certification criteria to EHR technology is determined by ONC. Testing of EHR technology in the Permanent Certification Program, henceforth referred to as the ONC HIT Certification Program<sup>2</sup>, is carried out by National Voluntary Laboratory Accreditation Program-Accredited Testing Laboratories (ATLs) as set forth in the final rule establishing the Permanent Certification Program (*Establishment of the Permanent Certification Program for Health Information Technology, 45 CFR Part 170, February 7, 2011.*)

Questions or concerns regarding the ONC HIT Certification Program should be directed to ONC at [ONC.Certification@hhs.gov](mailto:ONC.Certification@hhs.gov).

### CERTIFICATION CRITERIA

This Certification Criterion is from the Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition; Revisions to the Permanent Certification Program for Health Information Technology, Final Rule issued by the Department of Health and Human Services (HHS) on September 4, 2012.

§170.314(f)(3) Transmission to public health agencies – syndromic surveillance. EHR technology must be able to electronically create syndrome-based public health surveillance information for electronic transmission in accordance with:

(i) Ambulatory setting only.

(A) The standard specified in § 170.205(d)(2).

<sup>1</sup> Disclaimer: Certain commercial products may be identified in this document. Such identification does not imply recommendation or endorsement by ONC.

<sup>2</sup> Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition; Revisions to the Permanent Certification Program for Health Information Technology, Final Rule

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(B) Optional. The standard (and applicable implementation specifications) specified in § 170.205(d)(3).

(ii) Inpatient setting only. The standard (and applicable implementation specifications) specified in § 170.205(d)(3).

Per Section III.A. of the preamble of the Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition; Revisions to the Permanent Certification Program for Health Information Technology, Final Rule, the 2014 Edition of this Certification Criterion is classified as revised from the 2011 Edition. This Certification Criterion meets at least one of the three factors of revised certification criteria: (1) the certification criterion includes changes to capabilities that were specified in the previously adopted certification criterion, (2) the certification criterion has a new mandatory capability that was not included in the previously adopted certification criterion, or (3) the certification criterion was previously adopted as "optional" for a particular setting and is subsequently adopted as "mandatory" for that setting.

Per Section III.A. of the preamble of the Health Information Technology: Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, 2014 Edition; Revisions to the Permanent Certification Program for Health Information Technology, Final Rule where the transmission to public health agencies—syndromic surveillance certification criterion is discussed:

- "It is our understanding that EPs, EHRs, and CAHs will not necessarily be recording, accessing, and capturing separate kinds of "syndromic surveillance" information to facilitate the transmission of syndrome-based public health surveillance information to public health agencies. Rather, they will simply be "passing on" or reporting the information that already exists in their CEHRT to public health agencies."
- "In regard to the commenters assertion that HIE should not be required to be certified, we note that there is no such requirement. However, if an HIE performs a capability for which certification is required and an EP, EH, or CAH uses that capability for MU, then that capability must be certified."
- "We are adopting only the 2.5.1 standard because...public health agencies are rapidly moving to this standard and all stakeholders would benefit from focusing on a single standard for public health surveillance."
- "We believe it is appropriate to specifically adopt this standard and not just the implementation guide that references this standard to provide clarity around the certification requirements for this certification criterion. In particular, the implementation guide is optional for the ambulatory setting. Therefore, clearly specifying the standard will ensure that EHR technology designed for the ambulatory setting will be certified to the HL7 2.5.1 standard."
- "Several commenters recommended replacing "Inpatient" with "Hospital or urgent care." The commenters asserted that such a change more appropriately reflects the clinical settings that transmit syndromic surveillance data to health departments. While we appreciate the commenters' recommendation, the designation "inpatient" is a general designation that we use to distinguish certification criteria and capabilities that apply to a particular setting for certification. We currently designate only two settings for certification, the inpatient setting and the ambulatory

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## **The Informative Test Description Section provides a description of how the test procedure is organized and conducted**

- Not intended to provide normative statements of the certification requirements
- Includes criterion-specific information to assist the Tester
- Translates the criterion into more testable verbiage
- Spells out/lists the verbiage of the named standards
- Provides a statement regarding the source of the test data
- Provides initial identification of the applicable test requirements

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critterion. Rather, we stated that we believed that the certification criterion would constitute an unchanged certification criterion because all the capabilities included in the criterion were the same as the capabilities included in the corresponding 2011 Edition EHR certification criterion (§ 170.302(i)).”

- “Commenters supported our proposed “two certification criteria approach.””

**INFORMATIVE TEST DESCRIPTION**

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

This test evaluates the capability for a Complete EHR or EHR Module to electronically generate syndromic surveillance information for electronic transmission to public health agencies using

- For the ambulatory setting: HL7 2.5.1; or optionally HL7 2.5.1 and the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance
- For the inpatient setting: HL7 2.5.1 and the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance

Note from the Centers for Disease Control and Prevention (CDC): “For the purposes of electronic syndromic surveillance, an ambulatory healthcare setting is understood to be one in which patient encounters always occur on an outpatient basis. Examples include non-hospital based primary care or urgent care settings. On the other hand, inpatient encounters are understood to be hospital-based settings such as emergency departments and hospital care units.”

During the process of building the Conformance Test Tool, NIST discovered additional errata as well as conformance requirements that were either conflicting or unclear in the named standards documents. The “*Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance Testing Clarification Document-Release 1.0*” clarifies these issues and indicates how they are interpreted in the Test Tool. This document can be accessed via the “Documentation” tab on the Conformance Test Tool.

Test data, verified by the CDC, are provided for this test procedure.

The test procedure is organized into one section:

- **Create** – evaluates the capability of the EHR technology to electronically generate conformant HL7 messages for syndromic surveillance information

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- o Using the Vendor-identified EHR technology function(s), the Tester inputs the provided syndromic surveillance information encounter test data for the test patient(s) (input can be performed using a manual or automated process)
- o Using the Vendor-identified EHR function(s) and the provided test data, the Tester causes the EHR to generate the indicated syndromic surveillance information message using
  - For the ambulatory setting: HL7 2.5.1; or optionally HL7 2.5.1 and the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance
  - For the inpatient setting: HL7 2.5.1 and the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance
- o Using the Vendor-identified EHR function(s), the Tester imports the message into the NIST Syndromic Surveillance Conformance Test Tool
- o Using the Validation Report produced by the NIST Syndromic Surveillance Conformance Test Tool, the Tester verifies that the Implementation Guide conformance requirements tested are met and that the syndromic surveillance information message is conformant to the named standards

**REFERENCED STANDARDS**

§170.205 Content exchange standards and implementation specifications for exchanging electronic health information.	Regulatory Referenced Standard
The Secretary adopts the following content exchange standards and associated implementation specifications:	
(d)(2) Standard: HL7 2.5.1 (incorporated by reference in § 170.299).	
(d)(3) Standard: HL7 2.5.1 (incorporated by reference in § 170.299). Implementation specifications: PHIN Messaging Guide for Syndromic Surveillance (incorporated by reference in § 170.299) and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance (incorporated by reference in § 170.299).	

Note: For the purposes of this test procedure, the PHIN Messaging Guide for Syndromic Surveillance and Addendum to PHIN Messaging Guide for Syndromic Surveillance specifications listed above for §170.205(d)(3) are Release 1.1.

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## **The Referenced Standards section provides the specific standards from the ONC FR about the standards associated with the criterion**

- Lists the full verbiage of the standards named in the § 170.314(f)(3) criterion
  - § 170.205 Content exchange standards and implementation specifications for exchanging electronic health information

# Syndromic Surveillance Documents

- Testing encompasses the requirements and clarifications specified in 3 documents:
  1. The Implementation Guide
  2. Addendum to the Implementation Guide
  3. Testing Clarification Document

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## REFERENCED STANDARDS

§170.205 Content exchange standards and implementation specifications for exchanging electronic health information.

Regulatory Referenced Standard

The Secretary adopts the following content exchange standards and associated implementation specifications:

(d)(2) *Standard*. HL7 2.5.1 (incorporated by reference in § 170.299).

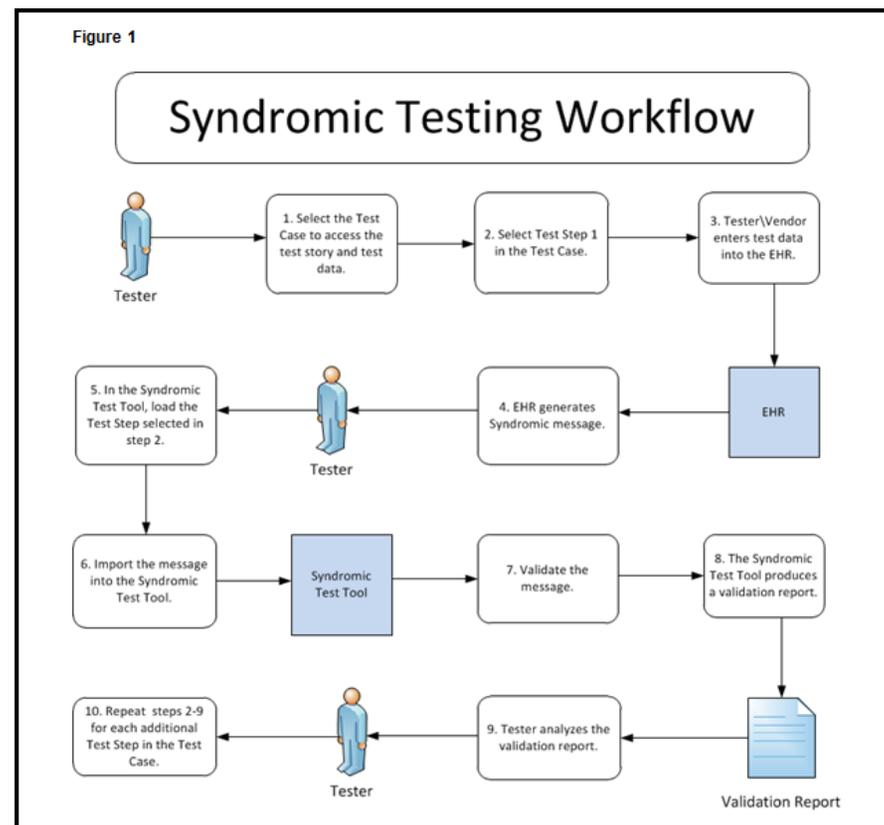
(d)(3) *Standard*. HL7 2.5.1 (incorporated by reference in § 170.299). *Implementation specifications*. PHIN Messaging Guide for Syndromic Surveillance (incorporated by reference in § 170.299) and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance (incorporated by reference in § 170.299).

Note: For the purposes of this test procedure, the PHIN Messaging Guide for Syndromic Surveillance and Addendum to PHIN Messaging Guide for Syndromic Surveillance specifications listed above for §170.205(d)(3) are Release 1.1.

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# The Normative Test Procedure section provides information for validating conformance to the criteria and standards

- A Testing Workflow diagram is included to help the Tester understand
  - How the major steps of the test are sequenced
  - When the Conformance Test Tool is to be used



# The Normative Test Procedure section provides information for validating conformance to the criteria and standards

(cont'd)

- Each sub-section provides additional information
  - Required Vendor Information – identifies actions the Vendor must perform to set up the test and information the Vendor must provide to the Tester (e.g., identification of the EHR functions to be used)
  - Required Test Procedures – provides step-by-step instructions to the Tester about how to test the EHR technology for this criterion
  - Inspection Test Guide – provides high-level instructions about how the Conformance Test Tool is to be used to validate the test results
- The numbered Steps in the Testing Workflow diagram are listed in the Required Test Procedure sub-section (e.g., “[Figure 1, Step 1]”)
- Each step in each subsection has a unique ID number
  - Required Vendor Information: VE170.314(f)(3) – #.0#
  - Required Test Procedure Steps: TE170.314(f)(3) – #.0#
  - Inspection Test Guide: IN170.314(f)(3) – #.0#

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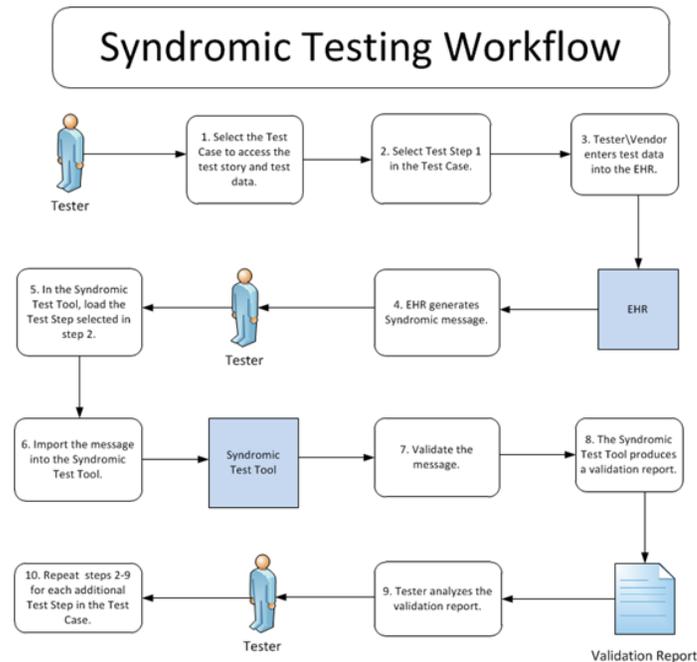
## NORMATIVE TEST PROCEDURES - AMBULATORY SETTING

(AKA EP Urgent Care Setting in the Test Data)

### Derived Test Requirements

DTR170.314.f.3 - 1: Electronically Create Syndromic Surveillance Information

Figure 1



The instructions in the derived test procedure listed below reference the numbered test steps in Figure 1 above.

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## DTR170.314.f.3 - 1: Electronically Create Syndromic Surveillance Information

### Required Vendor Information

VE170.314.f.3 – 1.01: Vendor shall identify the EHR function(s) that are available to 1) input the Test Data into the EHR for the test patients, 2) create syndromic surveillance information messages using the Test Data, 3) import the syndromic surveillance information messages to the NIST Syndromic Surveillance Conformance Test Tool, and 4) demonstrate support for any named value sets

VE170.314.f.3 – 1.02: Vendor shall provide the mechanism necessary to capture and import syndromic surveillance messages into the NIST Syndromic Surveillance Conformance Test Tool

### Required Test Procedures

For each of the three Test Cases provided in the Test Data section of this test procedure, follow the steps below:

TE170.314.f.3 – 1.01: Tester shall select a Test Case and one of the associated Data Sets consisting of syndromic surveillance information, and shall select Test Step 1 from the Data Set in the Test Case [Figure 1, Steps 1 & 2]

TE170.314.f.3 – 1.02: Using the Vendor-identified ambulatory EHR function(s), the Tester shall input the provided syndromic surveillance test data selected in TE170.314(f)(3) – 1.01 (input can be performed using a manual or automated process) [Figure 1, Step 3]

TE170.314.f.3 – 1.03: Using the Vendor-identified ambulatory EHR function(s) and the selected syndromic surveillance test data, the Tester shall

- Cause the EHR to generate the indicated syndromic surveillance information message for the test encounter based on HL7 2.5.1, or, optionally, based on the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance [Figure 1, Step 4]
- Import the syndromic surveillance information message to the NIST Syndromic Surveillance Conformance Test Tool identified in the Conformance Test Tools section of this test procedure [Figure 1, Step 5 & 6]

TE170.314.f.3 – 1.04: Using the Inspection Test Guide, the Tester shall verify that the syndromic surveillance messages are conformant to the named standards and are generated with the appropriate syndromic surveillance information [Figure 1, Steps 7, 8, & 9]

TE170.314.f.3 – 1.05: Tester shall repeat Steps 2 – 9 in Figure 1, selecting the next Test Step in the Data Set as specified in the Test Case selected in TE170.314(f)(3) – 1.01 until all of the specified Test Steps in the Test Case are completed [Figure 1, Step 10]

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Inspection Test Guide

IN170.314.f.3 – 1.01: After all of the specified Test Steps in the Test Case selected in TE170.314(f)(3) – 1.01 are completed, the Tester shall use the Validation Report produced for each Test Step by the NIST Syndromic Surveillance Conformance Test Tool (identified in the Conformance Test Tools section of this test procedure) and shall verify that the Syndromic Surveillance Implementation Guide conformance requirements tested are met

IN170.314.f.3 – 1.02: If the Vendor identifies the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance as the implementation specifications they are using for this test, the Tester shall inspect the EHR to verify the capability of the Vendor to support the value sets specified

- Using the Vendor-identified EHR function(s) and the NIST Syndromic Surveillance Conformance Test Tool, the Vendor shall demonstrate to the Tester that their EHR supports any of the value sets (selected at the Tester's discretion) specified in the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance

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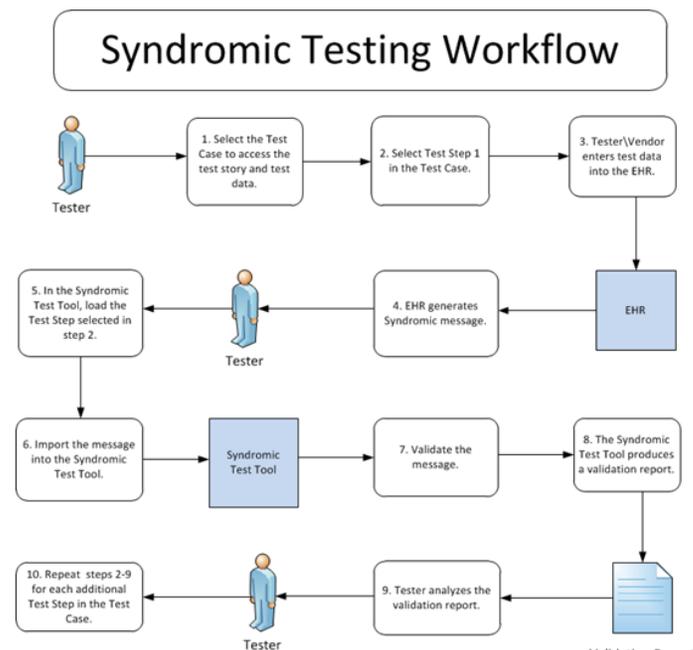
## NORMATIVE TEST PROCEDURES - INPATIENT SETTING

(AKA EH Emergency Department Setting in the Test Data)

### Derived Test Requirements

DTR170.314.f.3 - 2: Electronically Create Syndromic Surveillance Information

Figure 2



The instructions in the derived test procedure listed below reference the numbered test steps in Figure 2 above

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## DTR170.314.f.3 - 2: Electronically Create Syndromic Surveillance Information

### Required Vendor Information

VE170.314.f.3 – 2.01: Vendor shall identify the EHR function(s) that are available to 1) input the Test Data into the EHR for the test patients, 2) create syndromic surveillance information messages using the Test Data, 3) import the syndromic surveillance information messages to the NIST Syndromic Surveillance Conformance Test Tool, and 4) demonstrate support for any named value sets

VE170.314.f.3 – 2.02: Vendor shall provide the mechanism necessary to capture and import syndromic surveillance messages into the NIST Syndromic Surveillance Conformance Test Tool

### Required Test Procedures

For each of the three Test Cases provided in the Test Data section of this test procedure, follow the steps below:

TE170.314.f.3 – 2.01: Tester shall select a Test Case and one of the associated Data Sets consisting of syndromic surveillance information, and shall select Test Step 1 from the Data Set in the Test Case [Figure 2, Steps 1 & 2]

TE170.314.f.3 – 2.02: Using the Vendor-identified inpatient EHR function(s), the Tester shall input the provided syndromic surveillance test data selected in TE170.314(f)(3) – 2.01 (input can be performed using a manual or automated process) [Figure 2, Step 3]

TE170.314.f.3 – 2.03: Using the Vendor-identified inpatient EHR function(s) and the selected syndromic surveillance test data, the Tester shall

- Cause the EHR to generate the indicated syndromic surveillance information message for the test encounter based on the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance [Figure 2, Step 4]
- Import the syndromic surveillance information message to the NIST Syndromic Surveillance Conformance Test Tool identified in the Conformance Test Tools section of this test procedure [Figure 2, Step 5 & 6]

TE170.314.f.3 – 2.04: Using the Inspection Test Guide, the Tester shall verify that the syndromic surveillance messages are conformant to the named standards and are generated with the appropriate syndromic surveillance information [Figure 2, Steps 7, 8, & 9]

TE170.314.f.3 – 2.05: Tester shall repeat Steps 2 – 9 in Figure 2, selecting the next Test Step in the Data Set as specified in the Test Case selected in TE170.314(f)(3) – 2.01 until all of the specified Test Steps in the Test Case are completed [Figure 2, Step 10]

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IN170.314.f.3 – 2.01: After all of the specified Test Steps in the Test Case selected in TE170.314(f)(3) – 2.01 are completed, the Tester shall use the Validation Report produced for each Test Step by the NIST Syndromic Surveillance Conformance Test Tool (identified in the Conformance Test Tools section of this test procedure), and shall verify that the Syndromic Surveillance Implementation Guide conformance requirements tested are met

IN170.314.f.3 – 2.02: The Tester shall inspect the EHR to verify the capability of the Vendor to support the value sets specified in the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance

- Using the Vendor-identified EHR function(s) and the NIST Syndromic Surveillance Conformance Test Tool, the Vendor shall demonstrate to the Tester that their EHR supports any of the value sets (selected at the Tester's discretion) specified in the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance

**TEST DATA**

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

The Tester shall use and apply the provided test data during the test, without exception, unless one of the following conditions exists:

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

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## The Normative Test Procedure section provides information for validating conformance to the criteria and standards (cont'd)

- Inspection Test Guide – provides specific instructions to the Tester about verifying the EHR's/Vendor's capability to support specific value sets and named standards in the § 170.314(f)(3) criterion

IN170.314.f.3 – 1.01: After all of the specified Test Steps in the Test Case selected in TE170.314(f)(3) – 1.01 are completed, the Tester shall use the Validation Report produced for each Test Step by the NIST Syndromic Surveillance Conformance Test Tool (identified in the Conformance Test Tools section of this test procedure) and shall verify that the Syndromic Surveillance Implementation Guide conformance requirements tested are met

IN170.314.f.3 – 1.02: If the Vendor identifies the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance as the implementation specifications they are using for this test, the Tester shall inspect the EHR to verify the capability of the Vendor to support the value sets specified

- Using the Vendor-identified EHR function(s) and the NIST Syndromic Surveillance Conformance Test Tool, the Vendor shall demonstrate to the Tester that their EHR supports any of the value sets (selected at the Tester's discretion) specified in the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance

# Draft 170.314(f)(3) Transmission to Public Health Agencies - Syndromic Surveillance Test Procedure

## Inspection Test Guide

IN170.314.f.3 – 2.01: After all of the specified Test Steps in the Test Case selected in TE170.314(f)(3)– 2.01 are completed, the Tester shall use the Validation Report produced for each Test Step by the NIST Syndromic Surveillance Conformance Test Tool (identified in the Conformance Test Tools section of this test procedure), and shall verify that the Syndromic Surveillance Implementation Guide conformance requirements tested are met

IN170.314.f.3 – 2.02: The Tester shall inspect the EHR to verify the capability of the Vendor to support the value sets specified in the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance

- Using the Vendor-identified EHR function(s) and the NIST Syndromic Surveillance Conformance Test Tool, the Vendor shall demonstrate to the Tester that their EHR supports any of the value sets (selected at the Tester's discretion) specified in the PHIN Messaging Guide for Syndromic Surveillance and Conformance Clarification for EHR Certification of Electronic Syndromic Surveillance, Addendum to PHIN Messaging Guide for Syndromic Surveillance

## TEST DATA

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

The Tester shall use and apply the provided test data during the test, without exception, unless one of the following conditions exists:

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

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

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

For this test procedure the Tester shall select one Data Set from each of the three Test Cases listed:

- Urgent Care Visit
- Emergency Department Visit - Patient Dies
- Emergency Department Visit – Patient Admit

The Tester shall follow the normative test procedure to conduct these tests. Table 1 (Syndromic Surveillance test cases and Associated data sets) lists the three test case categories and identifies three data sets for each category. Each test case contains multiple test steps and therefore test data for each step. Details of the test cases (data sets) are provided in PDF files and are also accessible in the test tool (See the Context-based Validation tab). The test data provided for this test procedure has been verified by the CDC.

Table 1: Syndromic Surveillance Test Cases and Associated Data Sets

Test Case Category	Data Set 1	Data Set 2	Data Set 3
1. Urgent Care Visit	SS_1_1.1-A04_Step1	SS_1_1.2-A04_Step1	SS_1_1.3-A04_Step1
	SS_1_2.1-A03_Step2	SS_1_2.2-A03_Step2	SS_1_2.3-A03_Step2
2. Emergency Department Visit - Patient Dies	SS_2_1.1-A04_Step1	SS_2_1.2-A04_Step1	SS_2_1.3-A04_Step1
	SS_2_2.1-A08_Step2	SS_2_2.2-A08_Step2	SS_2_2.3-A08_Step2
	SS_2_3.1-A03_Step3	SS_2_3.2-A03_Step3	SS_2_3.3-A03_Step3
3. Emergency Department Visit – Patient Admit	SS_3_1.1-A04_Step1	SS_3_1.2-A04_Step1	SS_3_1.3-A04_Step1
	SS_3_2.1-A08_Step2	SS_3_2.2-A08_Step2	SS_3_2.3-A08_Step2
	SS_3_3.1-A03_Step3	SS_3_3.2-A03_Step3	SS_3_3.3-A03_Step3
	SS_3_4.1-A01_Step4	SS_3_4.2-A01_Step4	SS_3_4.3-A01_Step4

## NAVIGATING A TEST CASE

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A test case contains multiple test steps each consisting of a test story and a test data specification. The test story gives a real world scenario that provides the context for the test step with the test case. The test data specification provides the data associated with the test story and is what is typically available in the clinical setting. Together the test story and the test data specification provide sufficient information that is to be entered into the EHR for a particular test case step. Using this data and the EHR functionally a message is to be generated.

Another artifact called the message content data sheet is provided that shows a conformant message instance for the test case step. The message content is organized in a table format that provides the HL7 V2 message elements and the data associated with the message elements for a given test case step. If necessary the message content may be used to help the Vendor select the correct option provided by the EHR technology. It may also be used to provide assistance to the Tester and Vendor to resolve issues discovered in conformance testing. In short, the message content data sheet can be thought of as the “answer” to the scenario (“question”) provided by the test story and the test data specification.

#### HOW TO INTERPRET THE MESSAGE CONTENT DATA SHEET

The message content data sheet indicates the location and data of the message for a particular test case step. The message content data sheet can be used to assist the Tester in loading the EHR with the test case step data and provides a classification of the data. This classification indicates the type and the expected source of the data. How the data is classified is directly related to how the message content is validated. In some cases the validator is examining the message element for the presence of data where as in other cases it is examining the message element for the presence of data and for exact content.

The information in the **Location** column indicates the canonical element location in the HL7 V2 message. For example, MSH-9.3 represents the 3rd component in the 9th field of the MSH segment. The **Data Element** column indicates the name of the data element as specified by the HL7 2.5.1 standard and/or the PHIN Messaging Guide for Syndromic Surveillance.

The **Test Data** column provides the expected data (if applicable) for that message element. The **Data Classification** column indicates the classification of the data. See the table below for a description of the data classification and how it is being validated.

**Table 2 Description of Data Classification and Validation**

Data Classification	Description	Validation
Configurable	Data typically that is configured by the system (customer-definable). Example data is provided.	Validate for the presence of data
System Generated	Data typically generated automatically by system, e.g., message time. Example data is provided.	Validate for the presence of data
IG Fixed	Data that is fixed by the implementation guide; data can't be changed. Specific data is provided.	Validate for the presence and data content
Test Case Fixed	Data that is specific and fixed by the test case.	Validate for the presence and data

Changeable	data can't be changed. Specific data is provided.	content
	Data where the exact content is not relevant for the test case and can be changed for the purposes of testing. Example data is provided.	Validate for the presence of data

The test cases and the context-based validation test tool are tightly-coupled. In addition to validating message conformance, the test tool performs selective content validation based on the test story and test data provided, and deviation from the test data may cause the test tool to issue errors. For this reason, the Tester should use the test data as specified.

The HL7 V2 standard provides flexibility in messaging—many different message instances for a given test case step can be considered conformant. The test tool is designed to support most instances; however, the test tool may not be all inclusive. If the test tool issues an error for a message instance, the Vendor shall provide evidence of equivalency to the Tester.

#### CONFORMANCE TEST TOOLS

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

- o HL7 v2 – NIST provides an HL7 v2 validation tool designed specifically to support this test procedure. The tool is available as a Web Application. Multiple browsers may be used to access this tool; if the tool does not load completely using Internet Explorer 8 or Internet Explorer 9, alternative browsers such as Firefox, Google Chrome, or Safari are recommended.
- o The application can be downloaded for local installation
- o NIST is making available the web-site for pre-testing
- o The web application validation service is available at:

<http://iri.sipilotdevelopment.org/mu-syndromic>

(NOTE: This is a temporary site for the public comment period. Updates to the tool will be made without notice during this period).

The HL7 v2 service uses non-standard ports. If your firewall blocks HTTP traffic on non-standard ports, this tool may not be accessible. Please retry access from a location without a firewall that blocks non-standard ports.

Support for these tools is available by contacting:

Rob Snelick ([robert.snelick@nist.gov](mailto:robert.snelick@nist.gov))  
Computer Scientist  
National Institute of Standards and Technology (NIST)  
Information Technology Laboratory

# Certification Testing Overview and Scope I

- Certification testing is directed at an EHR product, not specific instances (implementations) of an EHR system
  - ONC certification specifies testing the capability of the EHR product to create and send data
  - Receiving systems are not being certified (e.g., the registry)
  - However, the certification requirements for the EHR product clearly indicate that the receiving system should be capable of processing the data specified in the ONC criteria (otherwise interoperability will not be achieved)
- Certified EHR Technology (CEHRT) is one step towards interoperability
  - Named standards in the ONC certification criteria specify a National Level (Constrainable) Conformance Profile
  - This is a critical step for achieving interoperability at the local levels—but not the end-all
  - State and local jurisdictions will need to complete trading-partner agreements (i.e., further constrain and test the profile—an implementation conformance profile)
  - CEHRT products will need to be configured and tested accordingly
  - Administrators must correctly use the EHR product
  - Receivers must be able to import and understand the information

# Certification Testing Overview and Scope II

- Testing Focus and Scope
  - Testing focuses on the technical requirements and capabilities of the EHR
  - Testing encompassing only the specific Test Cases
  - The Test Cases do not attempt to address the entire spectrum of use cases found in practice
- Stage-2 Certification Testing is Conformance Testing
  - Conformance can't be proven—only non-conformance
  - The quality and the quantity of tests is directly related to the degree of confidence that a product is conformant
  - Time and cost prohibit exhaustive testing
  - Certification testing focuses on the key aspects and covers the majority of the requirements
  - Interoperability testing still needs to be performed at the site level
  - In theory if two systems are found to be conformant then they should be interoperable
- CEHRT Tests are driven by Test Cases (Data)
  - NIST is testing the capability of an EHR product to create and send specific data to public health
  - Through consultation with public health experts an important subset of use cases were established
  - Certification Tests are Context-based

# Context-free Testing versus Context-based Testing

The Conformance Test Tool has two operational modes:

## 1. Context-free

- The context-free operational mode validates any Syndromic Surveillance message created by the EHR
- It is disassociated from a test script, test case, or specific content (test data)

## 2. Context-based

- The context-based operational mode validates messages associated with a given test script that includes a specific Syndromic Surveillance test scenario
  - The EHR creates a message that corresponds to the test data provided in the test script
  - Testing will include the technical requirements and content-specific requirements specified in the test case
- Context-based validation expands the test space enabling more comprehensive testing, for example:
  - Required, but may be empty (RE) elements
  - Conditional elements
  - Specific vocabulary content

ONC EHR certification testing is context-based for Syndromic Surveillance

# Context-based Testing

- Test Story and Test Data Specification
  - Use Case
  - Real world data—data typically encountered in the clinical setting
  - Think of this as the “question”
  - Multiple steps for each scenario (hence multiple messages)
- Message Content Data Sheet
  - Messaging requirements with data
  - Think of this as the “answer”
- Syndromic Surveillance Test Scenarios
  - Urgent Care Visit
  - Emergency Department Visit - Patient Dies
  - Emergency Department Visit – Patient Admit
- Tests Data
  - 3 sets of test data is provided for each scenario
  - EHRs are required to be test for each scenario
  - 1 set of test data is randomly selected for each scenario in certification testing
  - All data is transparent for certification
    - Focus is on testing the capability of the vendor systems
    - Focus is not on site (field) testing—this is the responsibility of local jurisdictions

# The Test Data section explains the purpose of and how to use the provided test data

- Includes introductory explanations about intent of the provided test data
- Lists special instructions about use of the 3 Syndromic Test Cases

For this test procedure the Tester shall select one Data Set from each of the three Test Cases listed:

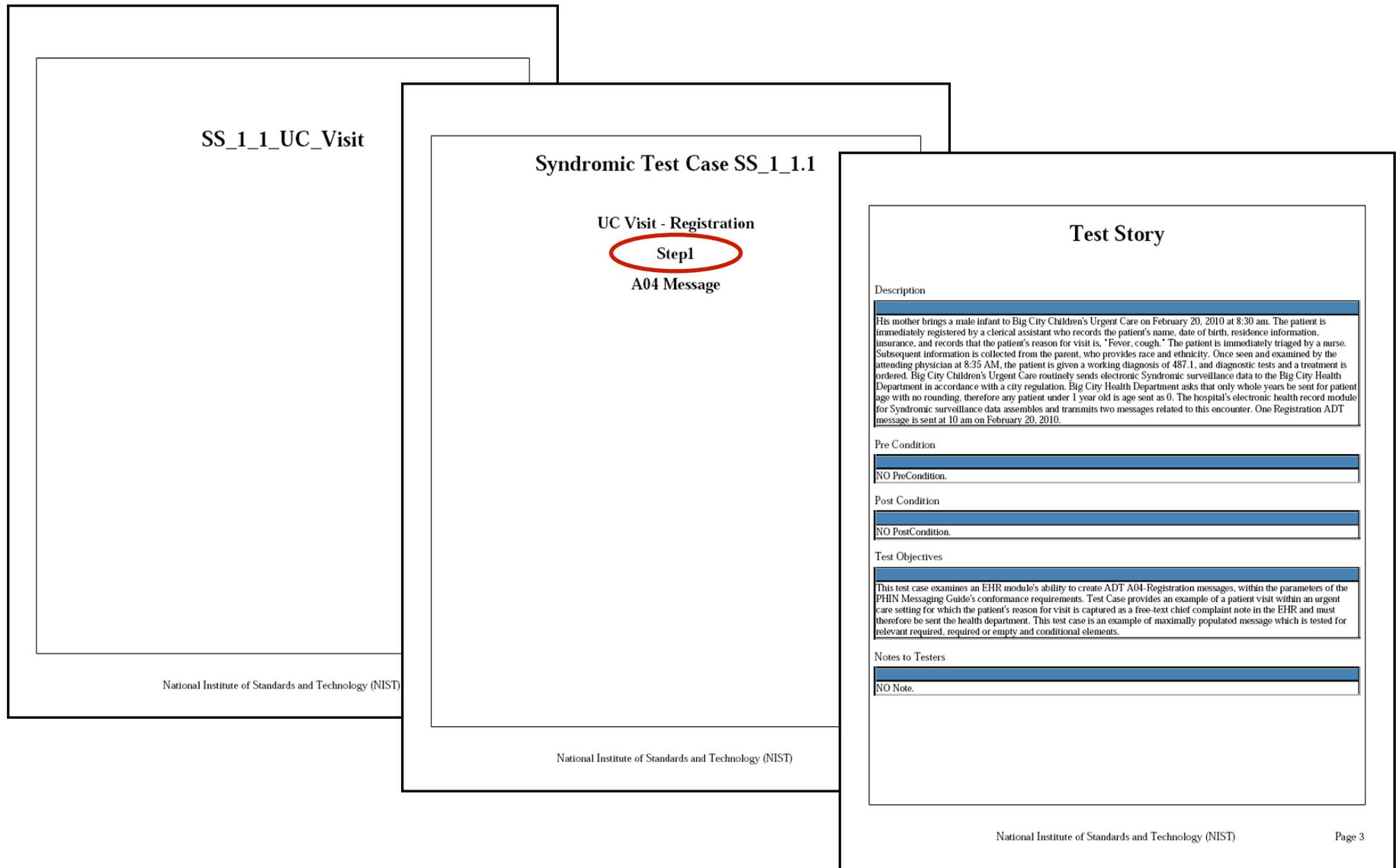
1. Urgent Care Visit
2. Emergency Department Visit - Patient Dies
3. Emergency Department Visit - Patient Admit

The Tester shall follow the normative test procedure to conduct these tests. Table 1 (Syndromic Surveillance test cases and Associated data sets) lists the three test case categories and identifies three data sets for each category. Each test case contains multiple test steps and therefore test data for each step. Details of the test cases (data sets) are provided in PDF files and are also accessible in the test tool (See the Context-based Validation tab). The test data provided for this test procedure has been verified by the CDC.

**Table 1: Syndromic Surveillance Test Cases and Associated Data Sets**

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1. Urgent Care Visit	SS_1_1.1-A04_Step1	SS_1_1.2-A04_Step1	SS_1_1.3-A04_Step1
	SS_1_2.1-A03_Step2	SS_1_2.2-A03_Step2	SS_1_2.3-A03_Step2
2. Emergency Department Visit - Patient Dies	SS_2_1.1-A04_Step1	SS_2_1.2-A04_Step1	SS_2_1.3-A04_Step1
	SS_2_2.1-A08_Step2	SS_2_2.2-A08_Step2	SS_2_2.3-A08_Step2
	SS_2_3.1-A03_Step3	SS_2_3.2-A03_Step3	SS_2_3.3-A03_Step3
3. Emergency Department Visit - Patient Admit	SS_3_1.1-A04_Step1	SS_3_1.2-A04_Step1	SS_3_1.3-A04_Step1
	SS_3_2.1-A08_Step2	SS_3_2.2-A08_Step2	SS_3_2.3-A08_Step2
	SS_3_3.1-A03_Step3	SS_3_3.2-A03_Step3	SS_3_3.3-A03_Step3
	SS_3_4.1-A01_Step4	SS_3_4.2-A01_Step4	SS_3_4.3-A01_Step4

# The Test Data documents provide the actual test data



# The Test Data documents provide the actual test data (cont'd)

### Test Data Specification

Patient Information

Element Name	Data
Name	Coded Pseudo-Name to ensure anonymity
Gender	Male
Race	Native Hawaiian or Other Pacific Islander
Ethnic Group	Not Hispanic or Latino
Zip Code	02130
County/Parish Code	25025
Patient Death Date and Time	

Visit Information

Element Name	Data
Admit Date and Time	02/20/2010 8:30 a.m.
Discharge Disposition	
Diagnosis Type	Working
Diagnosis	Influenza with other respiratory manifestations

Observation Results Information

Element Name	Data
Observation Identifier	Facility / Visit Type
Observation Value	Urgent Care
Units	
Observation Results Status	Final results; Can only be changed with a corrected

Observation Results Information

Element Name	Data
Observation Identifier	Age Time Patient Reported
Observation Value	0
Units	year
Observation Results Status	Final results; Can only be changed with a corrected

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Observation Results Information

Element Name	Data
Observation Identifier	Chief complaint: Find: Pt: Patient: Nom: Reported
Observation Value	Fever, cough
Units	
Observation Results Status	Final results; Can only be changed with a corrected result.

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# The Test Data documents provide the actual test data

## Message Content Data Sheet

### Test Case Information

UC Visit - Registration	
Test Case ID	SS_1.1.1-A04

### MSH : Message Header Segment

Location	Data Element	Data	C
MSH.1	Field Separator		IG Fixed
MSH.2	Encoding Characters	^~&	IG Fixed
MSH.4	Sending Facility		
MSH.4.1	Namespace ID	BgCtyChldrnUrgntCar	Configur
MSH.4.2	Universal ID	1231231234	Configur
MSH.4.3	Universal ID Type	NPI	Configur
MSH.7	Date/Time Of Message		
MSH.7.1	Time	201002201000	Changeab
MSH.9	Message Type		
MSH.9.1	Message Code	ADT	IG Fixed
MSH.9.2	Event Type	A04	IG Fixed
MSH.9.3	Message Structure	ADT_A01	IG Fixed
MSH.10	Message Control ID	NIST-SS-TC-XXX.XX	Changeab
MSH.11	Processing ID		
MSH.11.1	Processing ID	P	Changeab
MSH.12	VersionID		
MSH.12.1	Version ID	2.5.1	IG Fixed
MSH.21	Message Profile Identifier		
MSH.21.1	Entity Identifier	PH_SS-NoAck	IG Fixed
MSH.21.2	Namespace ID	SS Sender	IG Fixed
MSH.21.3	Universal ID	2.16.840.1.114222.4.10.3	IG Fixed
MSH.21.4	Universal ID Type	ISO	IG Fixed

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### EVN : Event Type Segment

Location	Data Element	Data
EVN.2	Recorded Date/Time	
EVN.2.1	Time	201002201000
EVN.7	Event Facility	
EVN.7.1	Namespace ID	BgCtyChldrnUrgntCar
EVN.7.2	Universal ID	1231231234
EVN.7.3	Universal ID Type	NPI

### PID : Patient Identification Segment

Location	Data Element	Data
PID.1	Set ID - PID	1
PID.3	Patient Identifier List	
PID.3.1	ID Number	11111
PID.3.5	Identifier Type Code	MR
PID.5[1]	Patient Name	
PID.5[1].7	Name Type Code	
PID.5[2]	Patient Name	
PID.5[2].7	Name Type Code	S
PID.8	Administrative Sex	M
PID.10	Race	
PID.10.1	Identifier	2076-8
PID.10.3	Name of Coding System	CDCREC
PID.11	Patient Address	
PID.11.5	Zip or Postal Code	02130
PID.11.9	County/Parish Code	25025
PID.22	Ethnic Group	
PID.22.1	Identifier	2186-5
PID.22.3	Name of Coding System	CDCREC
PID.29	Patient Death Date and Time	
PID.29.1	Time	
PID.30	Patient Death Indicator	

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### PV1 : Patient Visit information

Location	Data Element	Data	Categorization
PV1.1	Set ID - PV1	1	IG Fixed Data
PV1.19	Visit Number		
PV1.19.1	ID Number	1111_001	Changeable Data
PV1.19.5	Identifier Type Code	VN	IG Fixed Data
PV1.36	Discharge Disposition		
PV1.44	Admit Date/Time		
PV1.44.1	Time	201002200830	Changeable Data

### OBX : Observation/Result Segment

Location	Data Element	Data	Categorization
OBX.1	Set ID	1	IG Fixed Data
OBX.2	Value Type	CWE	Test Case Fixed Data
OBX.3	Observation Identifier		
OBX.3.1	Identifier	SS003	Test Case Fixed Data
OBX.3.3	Name of Coding System	PHINQUESTION	Test Case Fixed Data
OBX.5-CWE	Observation Value		
OBX.5-CWE.1	Identifier	251V00000X	Test Case Fixed Data
OBX.5-CWE.2	Text	Urgent Care	Changeable Data
OBX.5-CWE.3	Name of Coding System	NUCC	Test Case Fixed Data
OBX.5-CWE.4	Alternate Identifier		
OBX.5-CWE.5	Alternate Text		
OBX.5-CWE.6	Name of Alternate Coding System		
OBX.5-CWE.9	Original Text		
OBX.6	Units		
OBX.6.1	Identifier		
OBX.6.3	Name of Coding System		
OBX.11	Observation Result Status	F	Test Case Fixed Data

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# The Test Data documents provide the actual test data

**Syndromic Test Case SS\_1\_2.1**

UC Visit - Discharge

**Step2**

A03 Message

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**Test Story**

Description

By 2 pm the patient's vital signs have returned to normal and lab and radiology tests indicate that the child is has influenza and pneumonia. The patient is discharged home at 5 pm with a final primary diagnosis of pneumonia, and secondary diagnosis of influenza. Big City Children's Urgent Care routinely sends electronic Syndromic surveillance data to the Big City Health Department in accordance with a city regulation. Big City Health Department asks that only whole years be sent for patient age with no rounding, therefore any patient under 1 year old is age sent as 0. The hospital's electronic health record module for Syndromic surveillance data assembles and transmits two messages related to this encounter. One Discharge ADT message is sent at 6 pm on February 20, 2010.

Pre Condition

A04-Registration message should be sent before A03-Discharge message

Post Condition

NO PostCondition.

Test Objectives

This test case examines an EHR module's ability to create ADT A03-Discharge messages, within the parameters of the PHIN Messaging Guide's conformance requirements. Test Case provides an example of a patient visit within an urgent care setting for which the patient's reason for visit is captured as a free-text chief complaint note in the EHR and must therefore be sent the health department. This test case is an example of maximally populated message which is tested for relevant required, required or empty and conditional elements.

Notes to Testers

NO Note.

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# The Test Data documents provide the actual test data (cont'd)

### Test Data Specification

Patient Information

Element Name	Data
Name	Coded Pseudo-Name to ensure anonymity
Gender	Male
Race	Native Hawaiian or Other Pacific Islander
Ethnic Group	Not Hispanic or Latino
Zip Code	02130
County/Parish Code	25025
Patient Death Date and Time	

Visit Information

Element Name	Data
Admit Date and Time	02/20/2010 8:30 a.m.
Discharge Disposition	Discharged to home or self care (routine disc
Diagnosis Type	Final
Diagnosis	Influenza
Diagnosis Type	Final
Diagnosis	Pneumococcal pneumonia [Streptococcus pn pneumonia]

Observation Results Information

Element Name	Data
Observation Identifier	Facility / Visit Type
Observation Value	Urgent Care
Units	
Observation Results Status	Final results: Can only be changed with a co

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Observation Results Information

Element Name	Data
Observation Identifier	Age Time Patient Reported
Observation Value	0
Units	year
Observation Results Status	Final results: Can only be changed with a corrected result.

Observation Results Information

Element Name	Data
Observation Identifier	Chief complaint: Find: Pt: Patient: Nom: Reported
Observation Value	Fever, cough
Units	
Observation Results Status	Final results: Can only be changed with a corrected result.

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# The Test Data documents provide the actual test data

## Message Content Data Sheet

### Test Case Information

UC Visit - Discharge	
Test Case ID	SS_1_2.1-A03

### MSH : Message Header Segment

Location	Data Element	Data	Ca
MSH.1	Field Separator		IG Fixed
MSH.2	Encoding Characters	^~&	IG Fixed
MSH.4	Sending Facility		
MSH.4.1	Namespace ID	BgCtyChldrnUrgntCar	Configur
MSH.4.2	Universal ID	1231231234	Configur
MSH.4.3	Universal ID Type	NPI	Configur
MSH.7	Date/Time Of Message		
MSH.7.1	Time	201002201800	Changeal
MSH.9	Message Type		
MSH.9.1	Message Code	ADT	IG Fixed
MSH.9.2	Event Type	A03	IG Fixed
MSH.9.3	Message Structure	ADT_A03	IG Fixed
MSH.10	Message Control ID	NIST-SS-TC-XXX-XX	Changeal
MSH.11	Processing ID		
MSH.11.1	Processing ID	P	Changeal
MSH.12	Version ID		
MSH.12.1	Version ID	2.5.1	IG Fixed
MSH.21	Message Profile Identifier		
MSH.21.1	Entity Identifier	PH_SS-NoAck	IG Fixed
MSH.21.2	Namespace ID	SS Sender	IG Fixed
MSH.21.3	Universal ID	2.16.840.1.114222.4.10.3	IG Fixed
MSH.21.4	Universal ID Type	ISO	IG Fixed

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### EVN : Event Type Segment

Location	Data Element	Data
EVN.2	Recorded Date/Time	
EVN.2.1	Time	201002201800
EVN.7	Event Facility	
EVN.7.1	Namespace ID	BgCtyChldrnUrgntCar
EVN.7.2	Universal ID	1231231234
EVN.7.3	Universal ID Type	NPI

### PID : Patient Identification Segment

Location	Data Element	Data
PID.1	Set ID - PID	1
PID.3	Patient Identifier List	
PID.3.1	ID Number	11111
PID.3.5	Identifier Type Code	MR
PID.5[H]	Patient Name	
PID.5[1].7	Name Type Code	
PID.5[2]	Patient Name	
PID.5[2].7	Name Type Code	S
PID.8	Administrative Sex	M
PID.10	Race	
PID.10.1	Identifier	2076-8
PID.10.3	Name of Coding System	CDCREC
PID.11	Patient Address	
PID.11.5	Zip or Postal Code	02130
PID.11.9	County/Parish Code	25025
PID.22	Ethnic Group	
PID.22.1	Identifier	2186-5
PID.22.3	Name of Coding System	CDCREC
PID.29	Patient Death Date and Time	
PID.29.1	Time	
PID.30	Patient Death Indicator	

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### PV1 : Patient Visit information

Location	Data Element	Data	Categorization
PV1.1	Set ID - PV1	1	IG Fixed Data
PV1.19	Visit Number		
PV1.19.1	ID Number	1111_001	Changeable Data
PV1.19.5	Identifier Type Code	VN	IG Fixed Data
PV1.36	Discharge Disposition	01	Test Case Fixed Data
PV1.44	Admit Date/Time		
PV1.44.1	Time	201002200830	Changeable Data

### DG1 : Diagnosis Segment

Location	Data Element	Data	Categorization
DG1.1	Set ID - DG1	1	IG Fixed Data
DG1.3	Diagnosis Code - DG1		
DG1.3.1	Identifier	487	Test Case Fixed Data
DG1.3.2	Text	Influenza	Changeable Data
DG1.3.3	Name of Coding System	I9CDX	IG Fixed Data
DG1.6	Diagnosis Type	F	Test Case Fixed Data

### DG1 : Diagnosis Segment

Location	Data Element	Data	Categorization
DG1.1	Set ID - DG1	2	IG Fixed Data
DG1.3	Diagnosis Code - DG1		
DG1.3.1	Identifier	481	Test Case Fixed Data
DG1.3.2	Text	Pneumococcal pneumonia [Streptococcus pneumoniae pneumonia]	Changeable Data
DG1.3.3	Name of Coding System	I9CDX	IG Fixed Data
DG1.6	Diagnosis Type	F	Test Case Fixed Data

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## The Test Data section explains the purpose of and how to use the provided test data (cont'd)

- Includes instructions about “Navigating a Test Case”
- Explains “How to Interpret the Message Content Data Sheet”
- Provides a table with information about how Data Classification pertains to Validation

**Table 2 Description of Data Classification and Validation**

<b>Data Classification</b>	<b>Description</b>	<b>Validation</b>
<b>Configurable</b>	Data typically that is configured by the system (customer-definable). Example data is provided.	Validate for the presence of data
<b>System Generated</b>	Data typically generated automatically by system, e.g., message time. Example data is provided.	Validate for the presence of data
<b>IG Fixed</b>	Data that is fixed by the implementation guide; data can't be changed. Specific data is provided.	Validate for the presence and data content
<b>Test Case Fixed</b>	Data that is specific and fixed by the test case; data can't be changed. Specific data is provided.	Validate for the presence and data content
<b>Changeable</b>	Data where the exact content is not relevant for the test case and can be changed for the purposes of testing. Example data is provided.	Validate for the presence of data

## The Conformance Test Tools section provides a description and the links to associated tools

- Lists the automated testing and validation tools available for this test procedure
- Provides the url for accessing these Conformance Test Tools
- Identifies the NIST contact available to support the test tools during the Public Comment/Pilot period
- Provides additional guidance to assist the Tester in interpreting the conformance reports generated by the test tools

# Draft 170.314(f)(3) *Transmission to Public Health Agencies - Syndromic Surveillance* Test Procedure

2014 Edition  
Test Procedure for §170.314.f.3 Transmission to public health agencies –  
syndromic surveillance  
For Public Comment ■ September 28, 2012



## CONFORMANCE TEST TOOLS

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

- o HL7 v2 – NIST provides an HL7 v2 validation tool designed specifically to support this test procedure. The tool is available as a Web Application. Multiple browsers may be used to access this tool; if the tool does not load completely using Internet Explorer 8 or Internet Explorer 9, alternative browsers such as Firefox, Google Chrome, or Safari are recommended.
- o The application can be downloaded for local installation
- o NIST is making available the web-site for pre-testing
- o The web application validation service is available at:  
<http://ri.sipilotdevelopment.org/mu-syndromic>  
**(NOTE: This is a temporary site for the public comment period. Updates to the tool will be made without notice during this period).**

The HL7 v2 service uses non-standard ports. If your firewall blocks HTTP traffic on non-standard ports, this tool may not be accessible. Please retry access from a location without a firewall that blocks non-standard ports.

Support for these tools is available by contacting:

Rob Snelick ([robert.snelick@nist.gov](mailto:robert.snelick@nist.gov))  
Computer Scientist  
National Institute of Standards and Technology (NIST)  
Information Technology Laboratory

# The Document History section lists the published versions of the Test Procedure

- Lists the version numbers and the date each version was published
- Provides details about the updates made to each version

2014 Edition  
Test Procedure for §170.314.f.3 Transmission to public health agencies –  
syndromic surveillance  
For Public Comment ■ September 28, 2012

The Office of the National Coordinator for  
Health Information Technology

## Document History

Version Number	Description	Date Published
1.0	Released for public comment	September 28, 2012

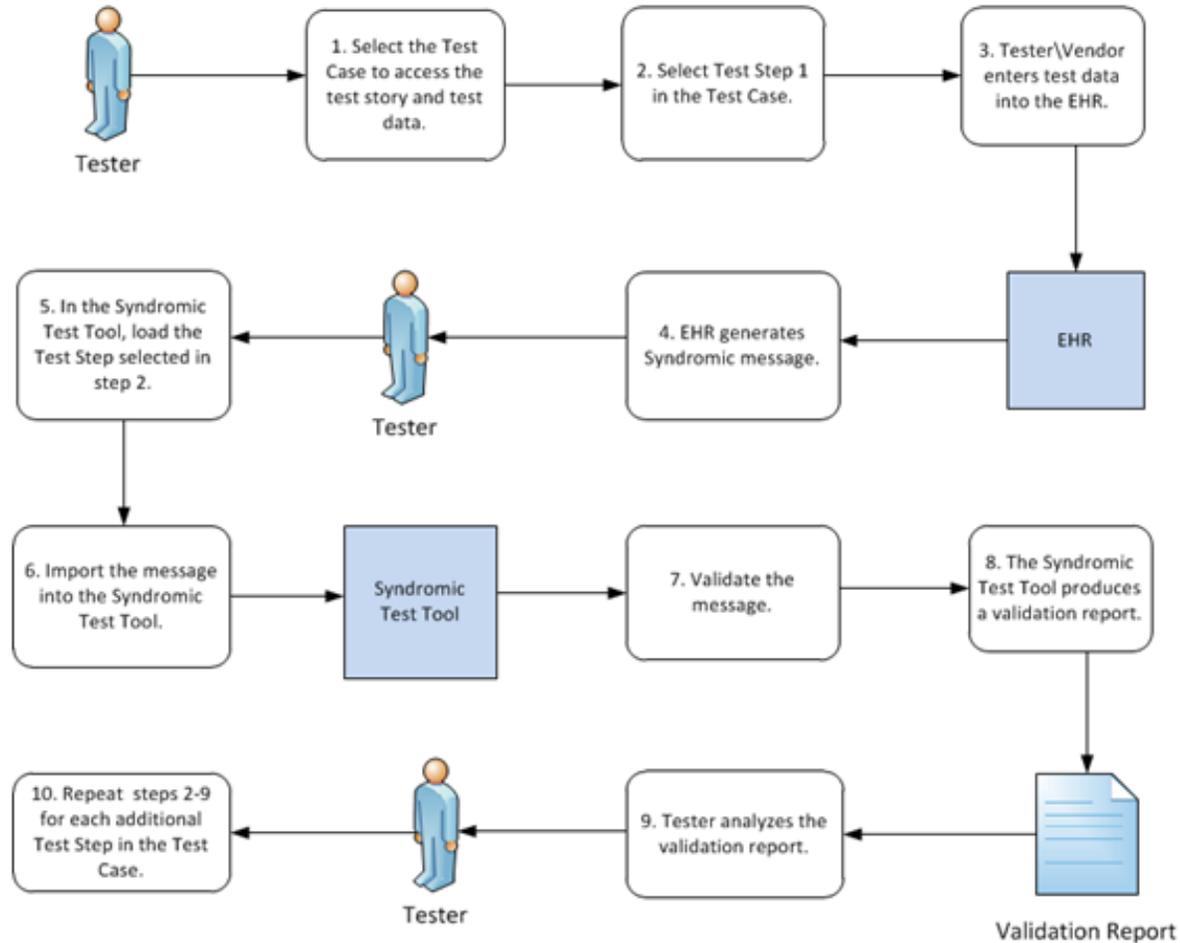
# The draft published Test Procedure, Test Data, and Conformance Test Tool are available from the Internet

- url for ONC site where draft Syndromic Surveillance Test Procedure document and Test Data documents are posted  
<http://www.healthit.gov/policy-researchers-implementers/2014-edition-draft-test-methods>
- url for NIST site where current Syndromic Surveillance Conformance Test Tool is posted  
<http://iri.sipilotdevelopment.org//mu-syndromic>
- Send comments about the Syndromic Surveillance Conformance Test Tool to  
Rob Snelick ([robert.snelick@nist.gov](mailto:robert.snelick@nist.gov))  
Computer Scientist  
National Institute of Standards and Technology (NIST)  
Information Technology Laboratory

# **NIST SYNDROMIC SURVEILLANCE CONFORMANCE TEST TOOL OVERVIEW AND DEMONSTRATION**

# Syndromic Testing Process

## Syndromic Testing Workflow



# Syndromic Context-based Testing Work Flow (Step by Step)

## 1) Select Test Case

- Open Syndromic Surveillance Validation tool using link: <http://iri.sipilotdevelopment.org/mu-syndromic/>.
- Click on Context-based Validation tab.
- Click on arrows to expand the Test Cases and select a Test Case.
- Test Case displays.
- Test Case may be downloaded as a PDF file.

## 2) Select Test Step and review Test Story

- Select Step 1 of Test Case.
- Test Story displays.
- Step 1 Test Story may be downloaded as a PDF file.
- Step 1 Test Package may be downloaded as a PDF file.

## 3) Review Test Data Specification and Message Content

- Click on Test Data Specification tab.
- Full tab is selected by default, displaying all data elements for message.
- To view a specific section, click on a tab.
- Review information provided for data elements of test message.
- Click on Message Content tab.
- Location is location of data element within the message.
- Name of data element is provided.
- Exact value of the data element for the selected Test Step is provided.
- The categorization indicates if the data is fixed or can be changed.

## 4) Create test message

- Using the EHR technology, create the Syndromic Surveillance test message with the test data provided for the selected Test Step (step 3).

# Syndromic Context-based Testing Work Flow (Step by Step – cont'd)

## 5) 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 4 to upload it.

## 6) Validate test message and review message validation errors

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

## 7) Generate Validation Report

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

# Syndromic Context-based Testing Work Flow (Step by Step – cont'd)

## 8) Look up valid data element values and tables

- Click on Profile Viewer tab.
- 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.
- Minimum and maximum valid lengths of data element are listed.
- Make a note of the table number.
- Click on Vocabulary tab.
- Locate and select table number.
- Valid values are listed.
- Click on Context-based Validation tab to return to message.

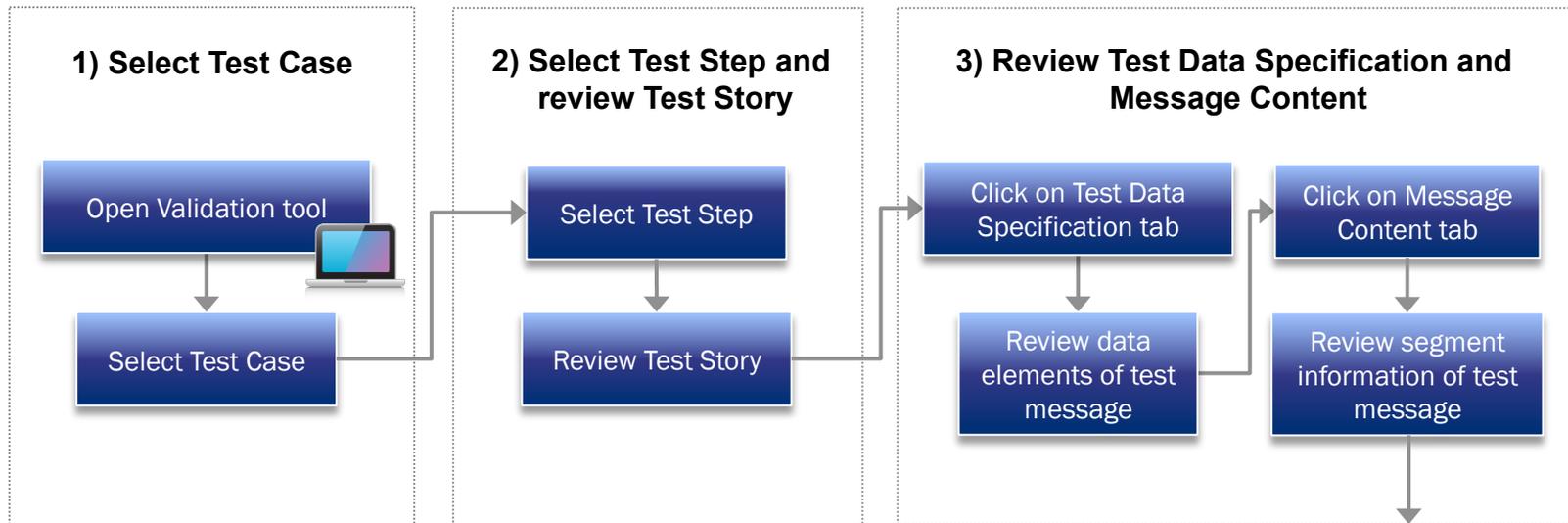
## 9) Repeat steps 2-8 for each additional Test Step of Test Case

- Select next Test Step of the Test Case and repeat steps 2-8.

# Syndromic Context-based Testing Work Flow

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

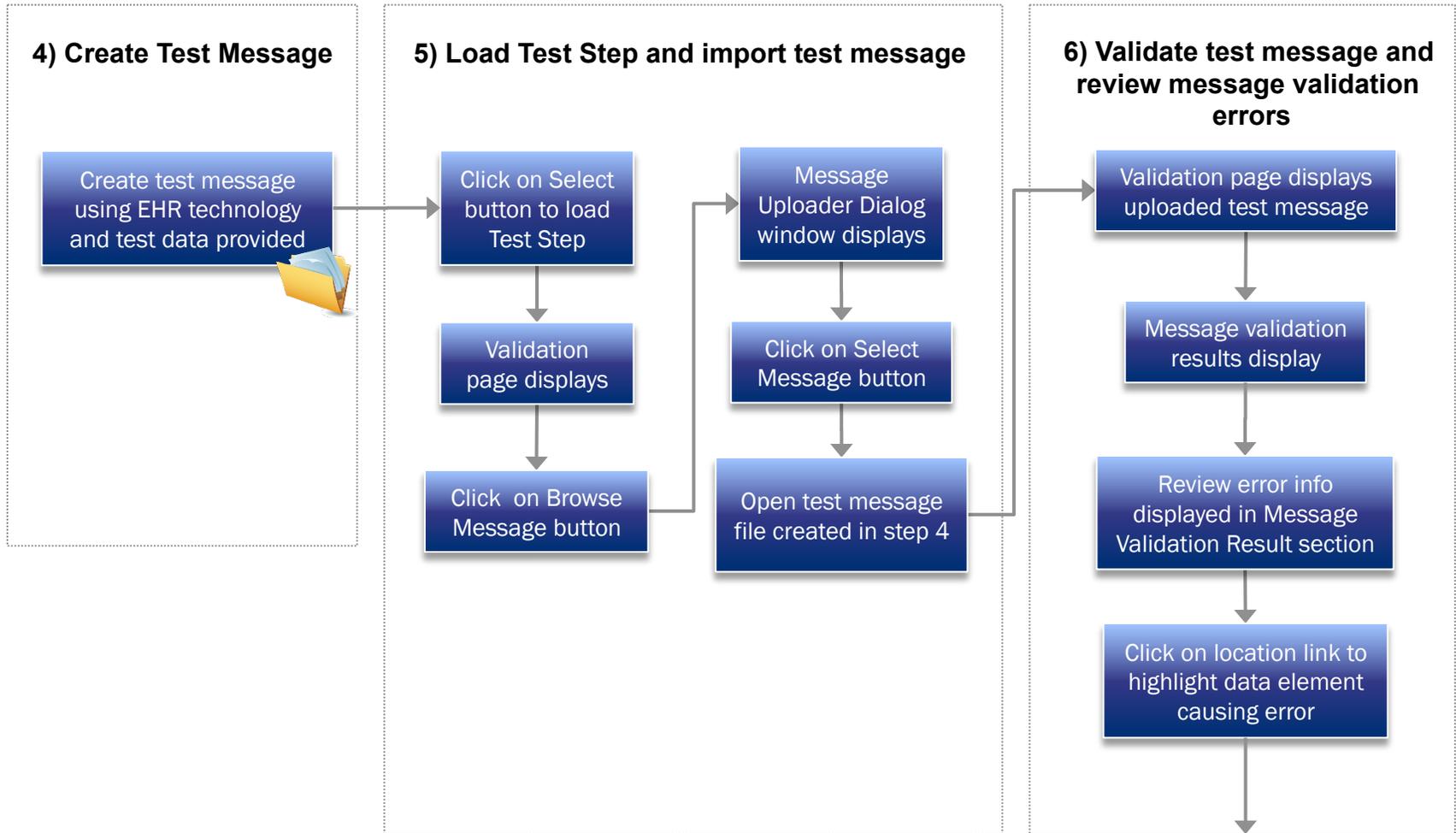
- 1) Select Test Case
- 2) Select Test Step and review Test Story
- 3) Review Test Data Specification and Message Content
- 4) Create Test Message
- 5) Load Test Step and import test message
- 6) Validate test message and review message validation errors
- 7) Generate Validation Report
- 8) Look up valid data element values and tables
- 9) Repeat steps 2-8 for each additional Test Step of Test Case



Next Slide



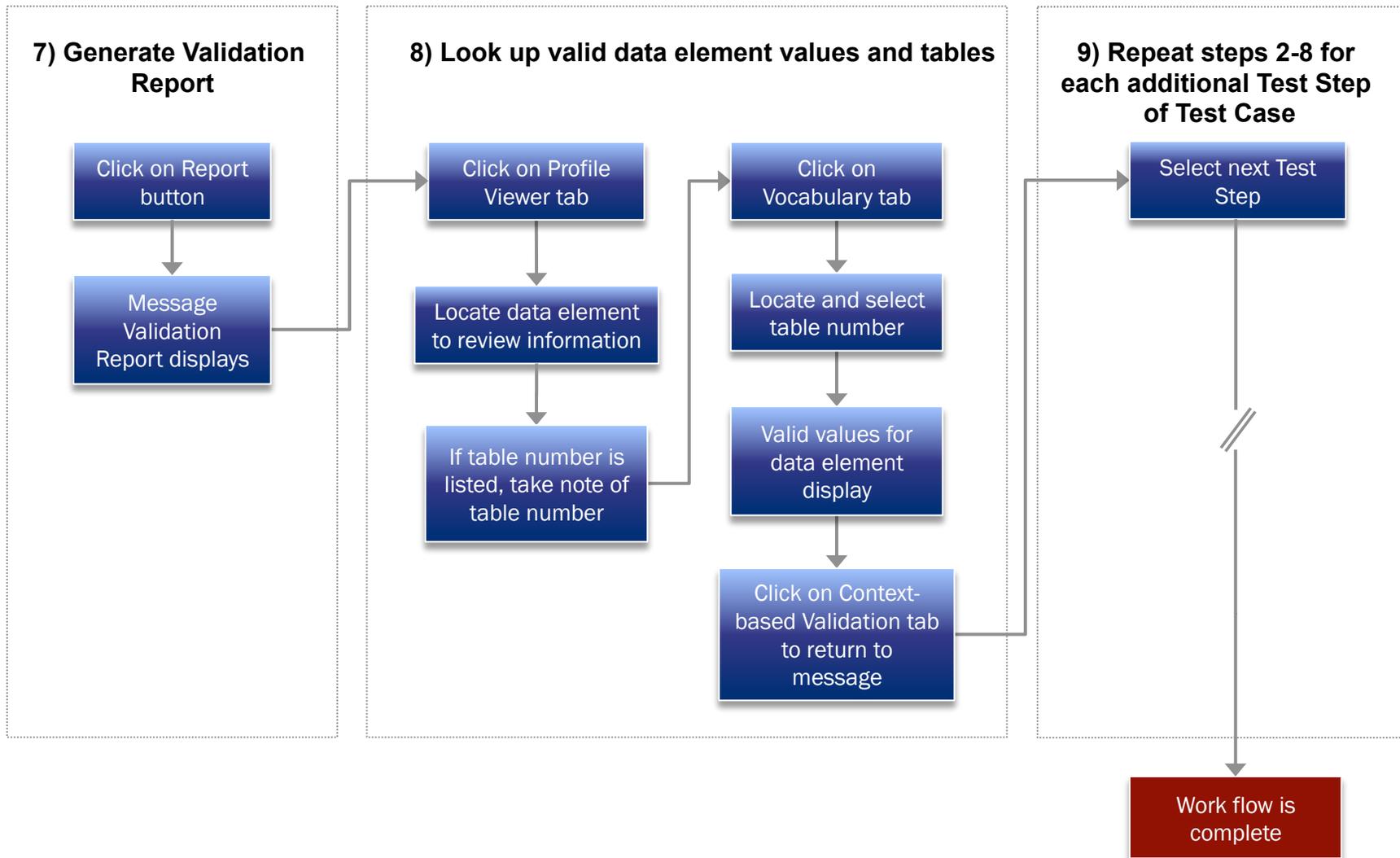
# Syndromic Context-based Testing Work Flow (cont'd)



Next Slide



# Syndromic Context-based Testing Work Flow (cont'd)



# 1) Select Test Case

1

Open Syndromic Surveillance Validation tool using link: <http://iri.sjipilotdevelopment.org/mu-syndromic/>.

2

Click on Context-based Validation tab.

5

Test Case may be downloaded as a PDF file.

3

Click on arrows to expand the Test Cases and select a Test Case.

4

Test Case displays.

The screenshot displays the web application interface for the Syndromic Surveillance Validation tool. The top navigation bar includes 'Home', 'Context-free Validation', 'Context-based Validation' (which is the active tab), 'Profile Viewer', 'Vocabulary', and 'Documentation'. Below this, there are sub-tabs for 'Test Case', 'Validation', and 'Report'. The main content area is split into two panes. The left pane, titled 'Test Cases', shows a tree view of test cases. The 'SS\_1\_UC\_Visit' test case is selected and highlighted in yellow. Underneath it, several sub-cases are listed with expandable arrows: 'SS\_1\_1.1-A04\_Step1', 'SS\_1\_2.1-A03\_Step2', 'SS\_1\_2\_UC\_Visit', 'SS\_1\_3\_UC\_Visit', 'SS\_2\_Patient\_Dies', and 'SS\_3\_ED\_Visit\_Admit'. The right pane displays the details for the selected test case, 'SS\_1\_1\_UC\_Visit'. At the top of this pane, there is a 'Download PDF' button. The main content of the right pane shows the title '2014 Edition Meaningful Use Test Data Syndromic Surveillance', followed by 'Test Case : SS\_1\_1\_UC\_Visit', 'Version 1.0', '28th September, 2012', and 'Syndromic Test Case SS\_1\_1.1'. Arrows from the numbered callouts point to the 'Context-based Validation' tab, the 'SS\_1\_1\_UC\_Visit' test case in the tree, the 'Download PDF' button, and the main content area of the right pane.

## 2) Select Test Step 1 and review Test Story

The screenshot displays a web-based interface for managing test cases. The top navigation bar includes 'Home', 'Context-free Validation', 'Context-based Validation', 'Profile Viewer', 'Vocabulary', and 'Documentation'. Below this, a secondary bar shows 'Test Case', 'Validation', and 'Report'. The main content area is split into two panes. The left pane, titled 'Test Cases', shows a tree view with 'SS\_1\_UC\_Visit' expanded to reveal 'SS\_1\_1\_UC\_Visit', which contains 'SS\_1\_1.1-A04\_Step1' (highlighted in yellow), 'SS\_1\_2.1-A03\_Step2', 'SS\_1\_2\_UC\_Visit', 'SS\_1\_3\_UC\_Visit', 'SS\_2\_Patient\_Dies', and 'SS\_3\_ED\_Visit\_Admit'. The right pane, titled 'Title: SS\_1\_1.1-A04\_Step1', shows the 'Test Story' tab selected. It features a 'Download Package(.pdf)' button and a 'Select' button. Below these are tabs for 'Test Story', 'Test Data Specification', and 'Message Content'. A 'Download as PDF' button is also present. The 'Description' section contains a detailed narrative: 'His mother brings a male infant to Big City Children's Urgent Care on February 20, 2010 at 8:30 am. The patient is immediately registered by a clerical assistant who records the patient's name, date of birth, residence information, insurance, and records that the patient's reason for visit is, "Fever, cough." The patient is immediately triaged by a nurse. Subsequent information is collected from the parent, who provides race and ethnicity. Once seen and examined by the attending physician at 8:35 AM, the patient is given a working diagnosis of 487.1, and diagnostic tests and a treatment is ordered. Big City Children's Urgent Care routinely sends electronic Syndromic surveillance data to the Big City Health Department in accordance with a city regulation. Big City Health Department asks that only whole years be sent for patient age with no rounding, therefore any patient under 1 year old is age sent as 0. The hospital's electronic health record module for Syndromic surveillance data assembles and transmits two messages related to this encounter. One Registration ADT message is sent at 10 am on February 20, 2010.' Below the description are sections for 'PreCondition' (containing 'NO PreCondition.'), 'PostCondition' (containing 'NO PostCondition.'), and 'TestObjectives' (containing 'This test case examines an EHR module's ability to create ADT A04-Registration messages, within the parameters of the PHIN Messaging Guide's conformance').

1 Select Step 1 of Test Case.

2 Test Story displays.

3 Step 1 Test Story may be downloaded as a PDF file.

4 Step 1 Test Package may be downloaded as a PDF file.

### 3) Review Test Data Specification and Message Content

1 Click on Test Data Specification tab.

2 Full tab is selected by default, displaying all data elements for message.

3 To view a specific section, click on a tab.

4 Review information provided for data elements of test message.

Element Name	Data
Name	Coded Pseudo-Name to ensure anonymity
Gender	Male
Race	Native Hawaiian or Other Pacific Islander
Ethnic Group	Not Hispanic or Latino
Zip Code	02130
County/Parish Code	25025
Patient Death Date and Time	

Element Name	Data
Admit Date and Time	02/20/2010 8:30 a.m.
Discharge Disposition	
Diagnosis Type	Working
Diagnosis	Influenza with other respiratory manifestations

**Test Data Specification**

Test Data Specification 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 Syndromic 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) Review Test Data Specification and Message Content (cont'd)

1 Click on Message Content tab.

2 Location is location of data element within the message.

3 Name of data element is provided.

4 Exact value of the data element for the selected Test Step is provided.

5 The categorization indicates if the data is fixed or can be changed.

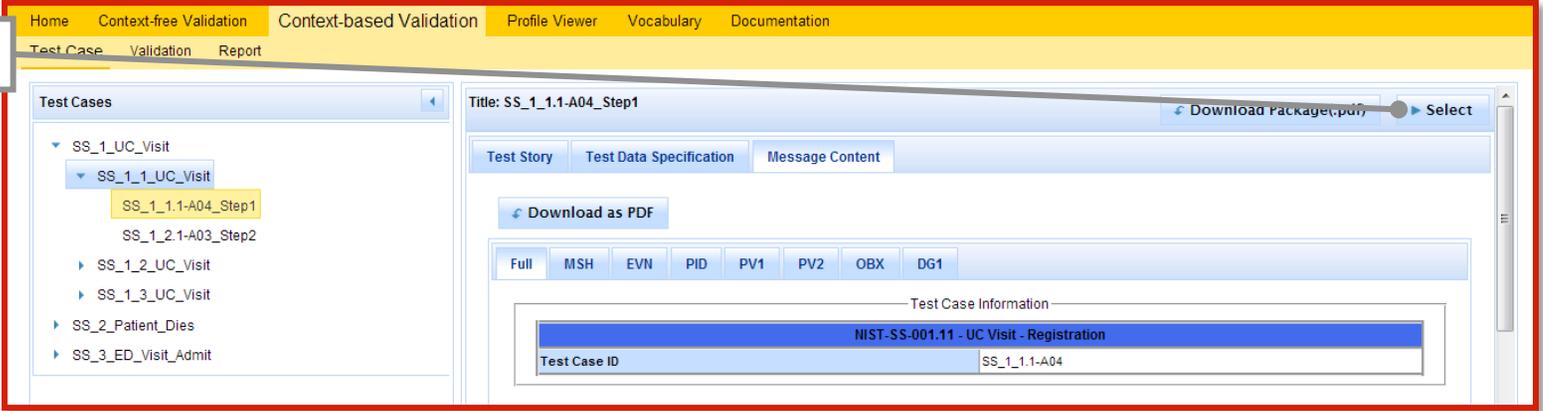
Location	Data Element	Data	Categorization
MSH.1	Field Separator		IG Fixed Data
MSH.2	Encoding Characters	^~&	IG Fixed Data
MSH.4	Ending Facility		
MSH.4.1	Namespace ID	BgCtyChldrnUrgntCar	Configurable Data
MSH.4.2	Universal ID	1231231234	Configurable Data
MSH.4.3	Universal ID Type	NPI	Configurable Data
MSH.7	Date/Time Of Message		
MSH.7.1	Time	201002201000	Changeable Data
MSH.9	Message Type		
MSH.9.1	Message Code	ADT	IG Fixed Data
MSH.9.2	Event type	A04	IG Fixed Data
MSH.9.3	Message Structure	ADT_A01	IG Fixed Data

### 4) Create test message

- Using the EHR technology, create the Syndromic Surveillance test message with the test data provided for the selected Test Step (step 3).

## 5) Load Test Step and import test message

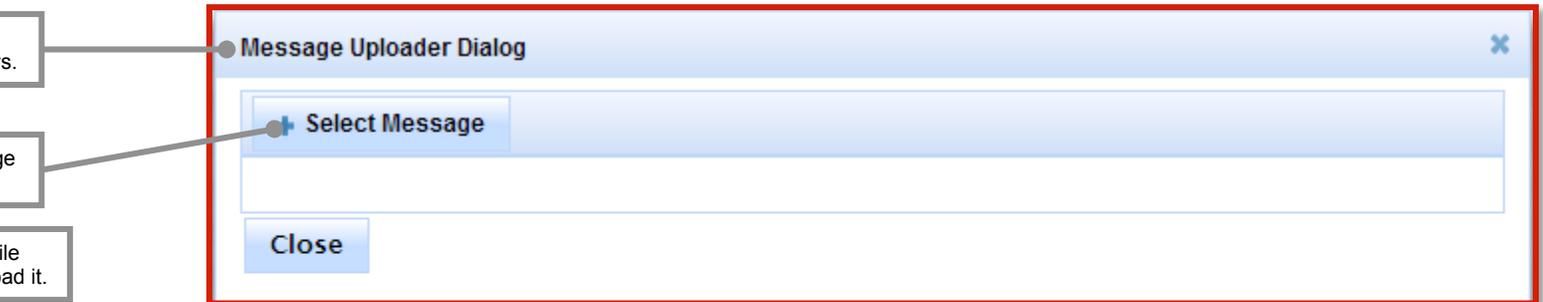
- 1 Click Select button to load the Test Step.



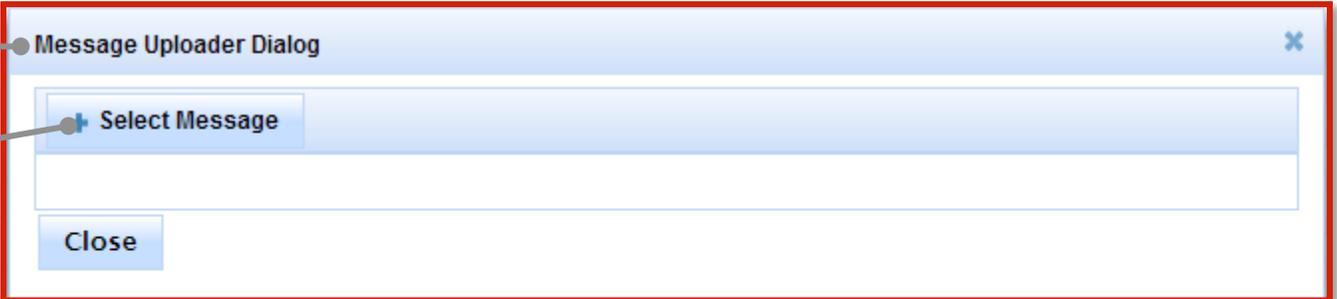
The screenshot shows the 'Test Case' page with a navigation menu at the top. On the left, a tree view shows the test case hierarchy, with 'SS\_1\_1.1-A04\_Step1' selected. On the right, the 'Title: SS\_1\_1.1-A04\_Step1' is displayed, and a 'Select' button is visible in the top right corner.
- 2 Validation page displays.



The screenshot shows the 'Validation' page for the selected test case. The 'Message Tree' section is on the left, and the 'Message Content' section is on the right. A 'Load Example' button is visible in the top right corner of the 'Message Content' section.
- 3 Click on Browse Message button.



The screenshot shows the 'Message Content' page with the 'Browse Message' button highlighted. The 'Load Example' button is also visible in the top right corner.
- 4 Message Uploader Dialog window displays.



The screenshot shows the 'Message Uploader Dialog' window. The 'Select Message' button is highlighted in the center of the dialog. A 'Close' button is visible at the bottom left.
- 5 Click on Select Message button.
- 6 Open test message file created in step 4 to upload it.

## 6) Validate test message and review validation errors

The screenshot displays the NIST HL7 Validator interface. The top navigation bar includes 'Home', 'Context-free Validation', 'Context-based Validation', 'Profile Viewer', 'Vocabulary', and 'Documentation'. Below this, there are tabs for 'Test Case', 'Validation', and 'Report'. The main area is divided into three sections:

- Message Tree:** A tree view on the left showing the structure of the message. The root is 'MSH R [1,1]', followed by 'EVN R [1,1]', 'PID R [1,1]', 'PV1 R [1,1]', and two 'OBX R [1,\*]' entries.
- Message Content:** A text area on the right showing the raw HL7 message. The message is: 

```
MSH|^~\&||BgCtyChldrnUrgntCar^1231231234^NPI||201002201000||ADT^A04^ADT_A01|NIST-SS-001.11|P|2.5.1|PH_SS-NoAck^SS
EVN||2010022010030|||BgCtyChldrnUrgntCar^1231231234^NPI
PID|1||11111^^^MR||^11111^^^S||M||2076-8^^CDCREC|^02130^^^25025|||2186-5^^CDCREC
PV1|1|||1111_001^^^VN|||201002200830
OBX|1|RCWE|SS003^^PHINQUESTION||251V00000X^Urgent Care^NUCC||||F
OBX|2||21612-7^^LN||O|a^^UCUM||||F
OBX|3|CWE|8661-1^^LN||^Fever, cough||||F
DGI|1||4871^Influenza with other respiratory manifestations^I9CDX||W
```
- Message Validation Result:** A table at the bottom showing validation errors. The table has columns for 'Description', 'Line', 'Column', and 'Location'. There are three errors listed:

Description	Line	Column	Location
[SS-8] EVN-2 (Recorded Date/Time of Message) SHALL be expressed with a minimum precision of the nearest minute, and be represented in the following format: 'YYYYMMDDHHMM[SS[S[S[S]]]] [+/-ZZZZ]'. The error points to the date '2010022010030' in the EVN segment.	2	6	EVN[1].2[1].1
[SS-16] OBX-2 SHALL be valued to the Literal Value in the set ('TS', 'TX', 'NM', 'CWE', 'XAD'). The error points to the value 'PHINQUESTION' in the OBX segment.	5	7	OBX[1].2[1]
OBX[2].6[1] is present whereas it is an unsupported element (X-Usage or W-Usage) [PREDICATE]: If OBX 2 (Value Type) is valued 'NM'.. EVALUATION : 'false' USAGE : C/R/ The error points to the value 'UCUM' in the OBX segment.	6	23	OBX[2].6[1]

Three numbered callouts provide instructions:

1. Uploaded test message displays. (Points to the Message Tree)
2. If message fails validation, errors will display. (Points to the Message Validation Result table)
3. Click on link to highlight the data element causing the error within the Message Tree and Content. (Points to the 'OBX[1].2[1]' link in the table)

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

1 Review error information provided in Message Validation Result section of page to correct message.

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

3 Column data element is located within message is provided.

4 Click to view additional pages of errors.

5 Total number of errors displays.

6 Location link displays table name.

**Message Validation Result** Invalid Settings Report

Description	Line	Column	Location
[SS-9] EVN-2 (Recorded Date/Time of Message) SHALL be represented in the following format: 'YYYYMM[SS].[S[S[S[S]]]] [+/-ZZZZ]'. The value '2010022010030' is not valid with respect to the format specified for datatype 'DTM'	2	6	EVN[1].2[1].1
[SS-16] OBX-2 SHALL be valued to the Literal Value in the set ('TS', 'TX', 'NM', 'CWE', 'XAD'). The value 'RCWE' specified in the message is not in the length range [1..3] specified in the profile.	5	7	OBX[1].2[1]
OBX[2].6[1] is present whereas it is an unsupported element (X-Usage or W-Usage) [PREDICATE]: If OBX.2 (value Type) is valued 'NM'.. EVALUATION : 'false' USAGE : C(R/X)	6	23	OBX[2].6[1]
The value '2010022010030' is not valid with respect to the format specified for datatype 'DTM'	2	6	EVN[1].2[1].1
The value 'RCWE' specified in the message is not in the length range [1..3] specified in the profile.	5	7	OBX[1].2[1]

Errors (9) Affirmatives (64) Warnings (1) Alerts (2)



## 8) Look up valid data element values and tables

1 Click on Profile Viewer tab.

2 Locate data element using table name from the location link.

3 Usage will indicate whether data element is required. The value R indicates it is required.

4 Minimum and maximum valid lengths of data element are listed.

5 Make a note of the table number.

Location	Usage	Cardinality	Data Type	Length	Table	Predicate	Conformance Statement
OBX: Observation / Result	R	[1,*]					
OBX.1: Set ID - OBX	R	[1,1]	SI	[1,4]			
OBX.2: Value Type	R	[1,1]	ID	[1,3]	0125		SS-16 : OBX-2 SHALL be valued to the Literal Value in the set ('TS', 'TX', 'NM', 'CWE', 'XAD').
OBX.3: Observation Identifier	R	[1,1]	CE_SS_3	[1,478]	Observation Identifier (Syndromic Surveillance)		
OBX.5: Observation Value	RE	[0,*]	varies	[1,99999]			
OBX.6: Units	C(R/X)	[0,1]	CE_SS_3	[1,62]	UCUM	If OBX.2 (Value Type) is valued "NM".	
OBX.11: Observation Result Status	R	[1,1]	ID	[1,1]	0085		

**Profile Viewer page**

This page allows tester to view data element information per conformance profile including usage, cardinality, data type, length, tables and conformance statements.

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

1 Click on Vocabulary tab.

2 Locate and select table number.

3 Valid values are listed.

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

Table Id	Value Set Name
0085	Diagnosis Type (HL7)
0112	Message Type (Syndromic Surveillance)
0125	Observation Result Status (HL7)
0190	Discharge Disposition (HL7)
0200	Value Type (Syndromic Surveillance)
0301	Address Type (HL7)
	Name Type (Syndromic Surveillance)
	Universal ID Type (Syndromic Surveillance)
	Measure (Syndromic Surveillance)
	HL7 2x Table

Value (Code)	Description	Code Sys
C	Record coming over is a correction and thus replaces a final result	HL70085
D	Deletes the OBX record	HL70085
F	Final results; Can only be changed with a corrected result.	HL70085
I	Specimen in lab; results pending	HL70085
N	Not asked; used to affirmatively document that the observation identified in the OBX was not sought when the universal service ID in OBR-4 implies that it would be sought.	HL70085
O	Order detail description only (no result)	HL70085
P	Preliminary results	HL70085
R	Results entered -- not verified	HL70085
S	Partial results	HL70085

**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.

## 9) Repeat steps 2-8 for each additional Test Step in Test Case.

# Syndromic Context-free Testing Work Flow (Step by Step)

## 1) Import test message

- Open Syndromic Surveillance Validation tool using link: <http://iri.sipilotdevelopment.org/mu-syndromic/>.
- Click on Context-free Validation tab.
- Select a profile to use to validate the message.
- 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.
- Click on link to highlight the data element causing the error within the Message Tree and Content.
- Review error information provided in Message Validation Result section of page to correct message.
- Description explains why error occurred. Format or table of data element may be provided.
- Column data element is located within message is provided.
- Click to view additional pages of errors.
- Total number of errors displays.
- Location link displays table name.

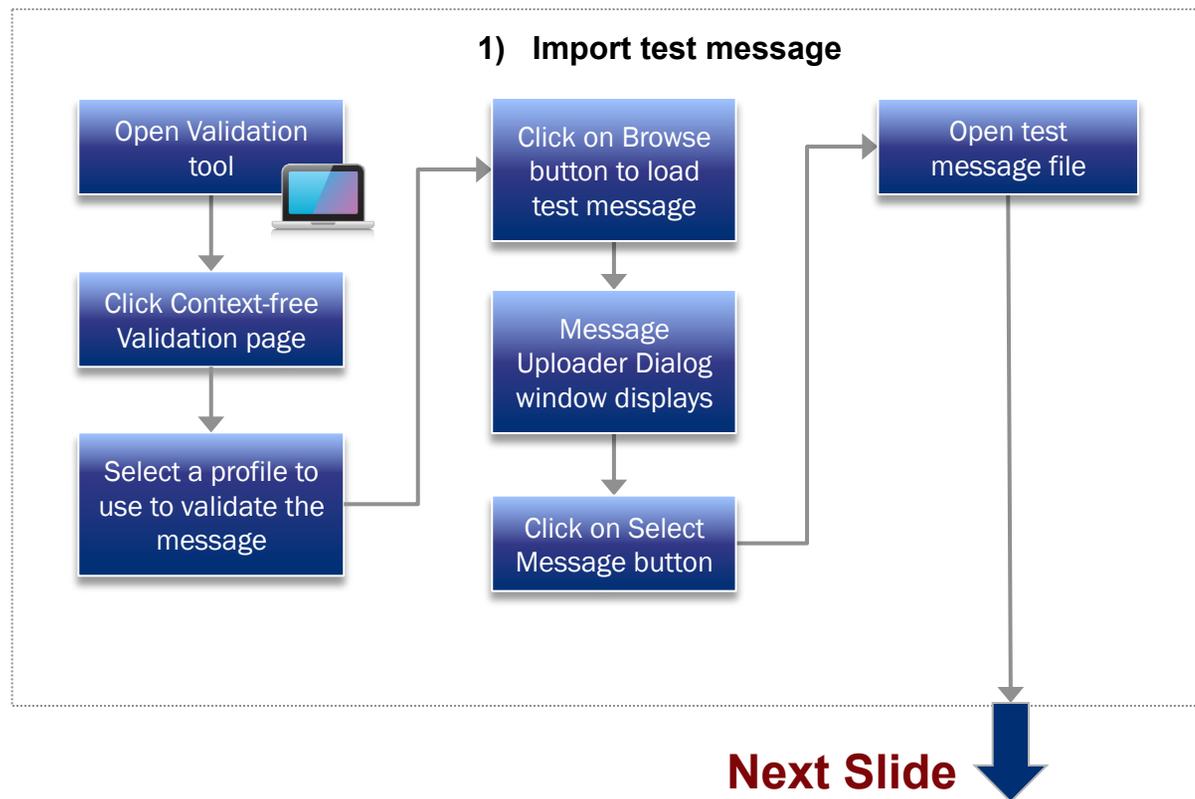
## 3) Look up valid data element values and tables

- Click on Profile Viewer tab.
- 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.
- Minimum and maximum valid lengths of data element are listed.
- Make a note of the table number.
- Click on Vocabulary tab.
- Locate and select table number.
- Valid values are listed.
- Click on Context-free Validation tab to return to message.

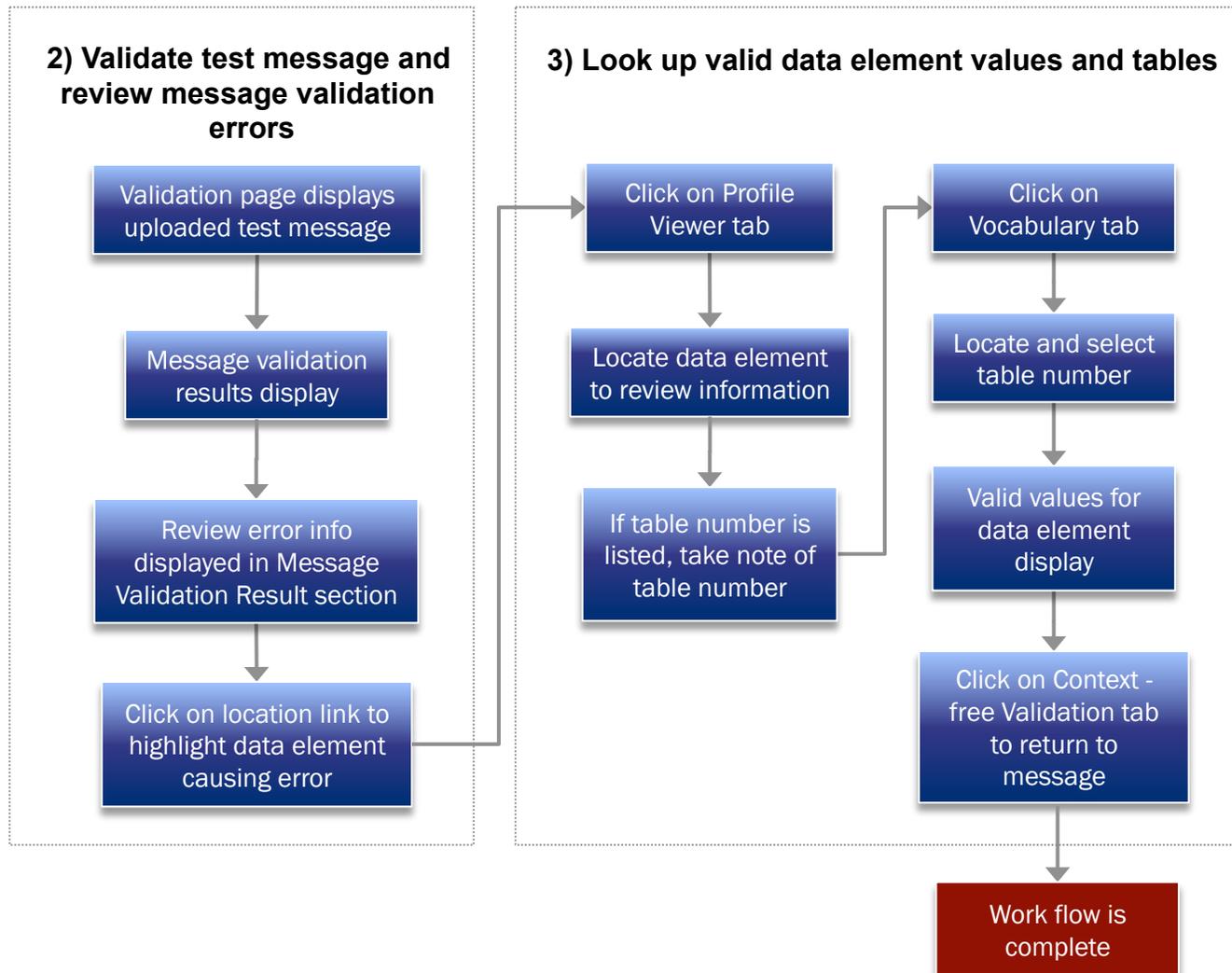
# Syndromic Context-free Testing Work Flow

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



# Syndromic Context-free Testing Work Flow (cont'd)



# 1) Import test message

## Context-free Validation page

This page validates any Syndromic message. 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.

1 Open Syndromic Surveillance Validation tool using link: <http://iri.sipilotdevelopment.org/mu-syndromic/>.

2 Click on Context-free Validation tab.

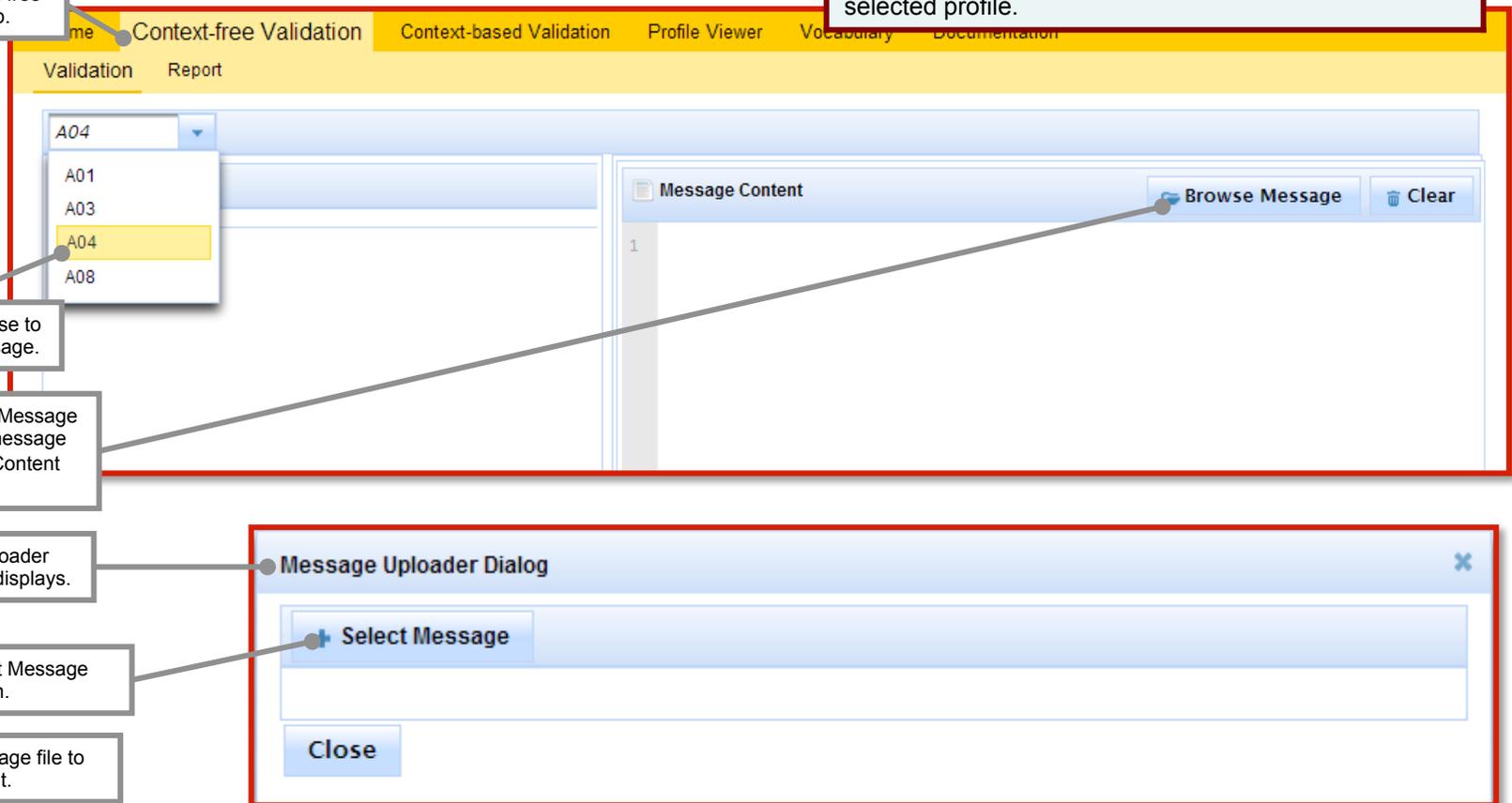
3 Select profile to use to validate the message.

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

5 Message Uploader Dialog window displays.

6 Click on Select Message button.

7 Open test message file to upload it.



## 2) Validate test message and review message validation errors

1 Uploaded test message displays.

2 If message fails validation, errors will display.

3 Click on link to highlight the data element causing the error within the Message Tree and Content.

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

Validation Report

A04

Message Tree

- MSH R [1,1]
- EVN R [1,1]
  - EVN[1].2[1].Recorded Date/Time R [1,1]
    - EVN[1].2[1].1.Time R [1,1]
      - 2012081712330
- PV1 R [1,1]
- OBX R [1,\*]
- OBX R [1,\*]
- OBX R [1,\*]

Message Content

```
1 MSH|^~\c||DownTownProcessing^2231237890^NPI|||2012081712330||ADT^A04^ADT_A01|NIST-SS-001.12|P|2.5.1|PH_SS-NoAck^SS
2 EVN||2012081712330|||MidTwnUrgentC^2231231234^NPI
3 PID|1||2222^MR|^S||F||2106-3^CDCREC|^30303^13121|||2135-2^CDCREC
4 PV1|1|||2222_001^VN|||201208171200
5 OBX|1|CWE|SS003^SPHINQUESTION||251V00000X^Urgent Care^NUCC||||F
6 OBX|2|NM|21612-7^LN|35|a^UCUM||||F
7 OBX|3|CWE|18661-1^LN|^Fever, chills, smelly urine with burning during urination||||F
8
```

Message Validation Result

Invalid Settings Report

Description	Line	Column	Location
[SS-8] EVN-2 (Recorded Date/Time of Message) SHALL be expressed with a minimum precision of the nearest minute, and be represented in the following format: 'YYYYMMDDHHMM[SS.S[S[S]]] [+/-ZZZZ]'. The value '2012081712330' is not valid with respect to the format specified for datatype 'DTM'	2	6	EVN[1].2[1].1
The value '30303' specified in the message does not match any of the values in the table 'USPS'	3	59	PID[1].11[1].5



### 3) Look up valid data element values and tables

1 Click on Profile Viewer tab.

2 Locate data element using table name from the location link.

3 Usage will indicate whether data element is required. The value R indicates it is required.

4 Minimum and maximum valid lengths of data element are listed.

5 Make a note of the table number.

Location	Usage	Cardinality	Data Type	Length	Table	Predicate	Conformance Statement
OBX : Observation / Result	R	[1,*]					
OBX.1 : Set ID - OBX	R	[1,1]	SI	[1,4]			
OBX.2 : Value Type	R	[1,1]	ID	[1,3]	0125		SS-16 : OBX-2 SHALL be valued to the Literal Value in the set ('TS', 'TX', 'NM', 'CWE', 'XAD').
OBX.3 : Observation Identifier	R	[1,1]	CE_SS_3	[1,478]	Observation Identifier (Syndromic Surveillance)		
OBX.5 : Observation Value	RE	[0,*]	varies	[1,99999]			
OBX.6 : Units	C(R/X)	[0,1]	CE_SS_3	[1,62]	UCUM	If OBX.2 (Value Type) is valued "NM".	
OBX.11 : Observation Result Status	R	[1,1]	ID	[1,1]	0085		

**Profile Viewer page**

This page allows tester to view data element information per conformance profile including usage, cardinality, data type, length, tables and conformance statements.

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

1 Click on Vocabulary tab.

2 Locate and select table number.

3 Valid values are listed.

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

Table Id	Value Set Name
	Diagnosis Type (HL7)
	Message Type (Syndromic Surveillance)
0085	Observation Result Status (HL7)
0112	Discharge Disposition (HL7)
0125	Value Type (Syndromic Surveillance)
0190	Address Type (HL7)
	Name Type (Syndromic Surveillance)
0301	Universal ID Type (Syndromic Surveillance)
	Measure (Syndromic Surveillance)
	HL7 2x Table

Value (Cod#)	Description	Code Sys
C	Record coming over is a correction and thus replaces a final result	HL70085
D	Deletes the OBX record	HL70085
F	Final results; Can only be changed with a corrected result.	HL70085
I	Specimen in lab; results pending	HL70085
N	Not asked; used to affirmatively document that the observation identified in the OBX was not sought when the universal service ID in OBR-4 implies that it would be sought.	HL70085
O	Order detail description only (no result)	HL70085
P	Preliminary results	HL70085
R	Results entered -- not verified	HL70085
S	Partial results	HL70085

**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.

## Q&A / Open Discussion

- General comments/questions about the § 170.314(f)(3) Transmission to Public Health Agencies - Syndromic Surveillance Test Procedure, Test Data, and NIST Syndromic Surveillance Conformance Test Tool

# NEXT STEPS

# Identified Next Steps

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

# Conclusion and Wrap Up

- Final questions and comments
- End of session