The Office of the National Coordinator for Health Information Technology

2014 Edition Test Scenarios Development Overview

September 11, 2013

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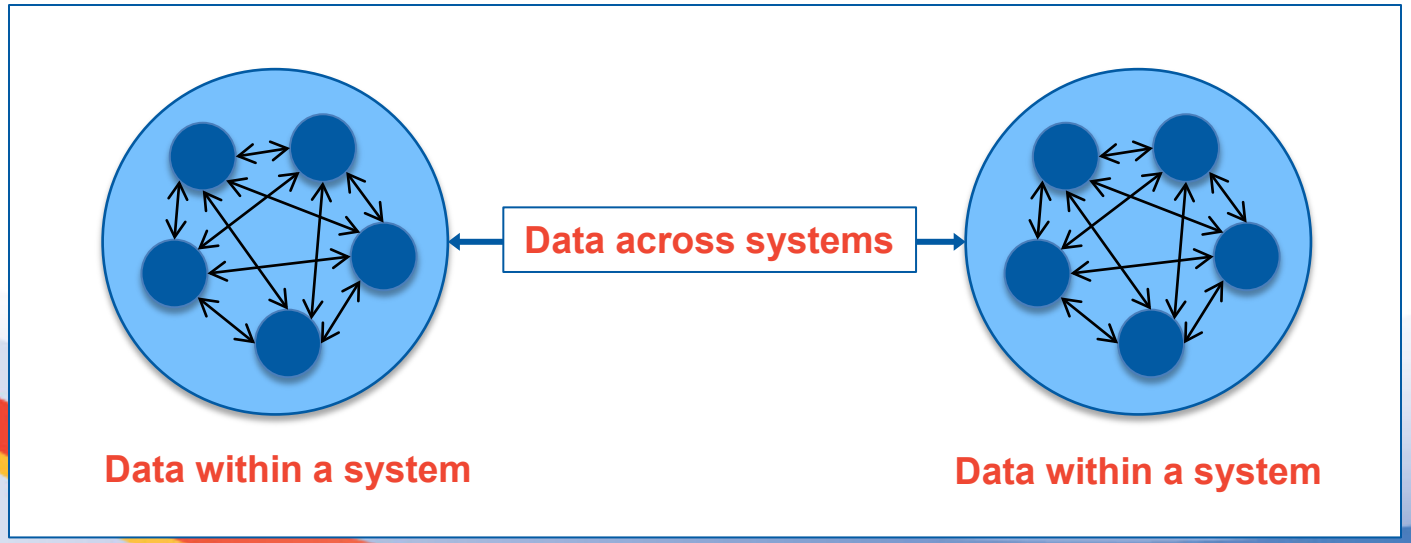
Scenario-Based Testing in Review

Scenario-based testing is intended to:

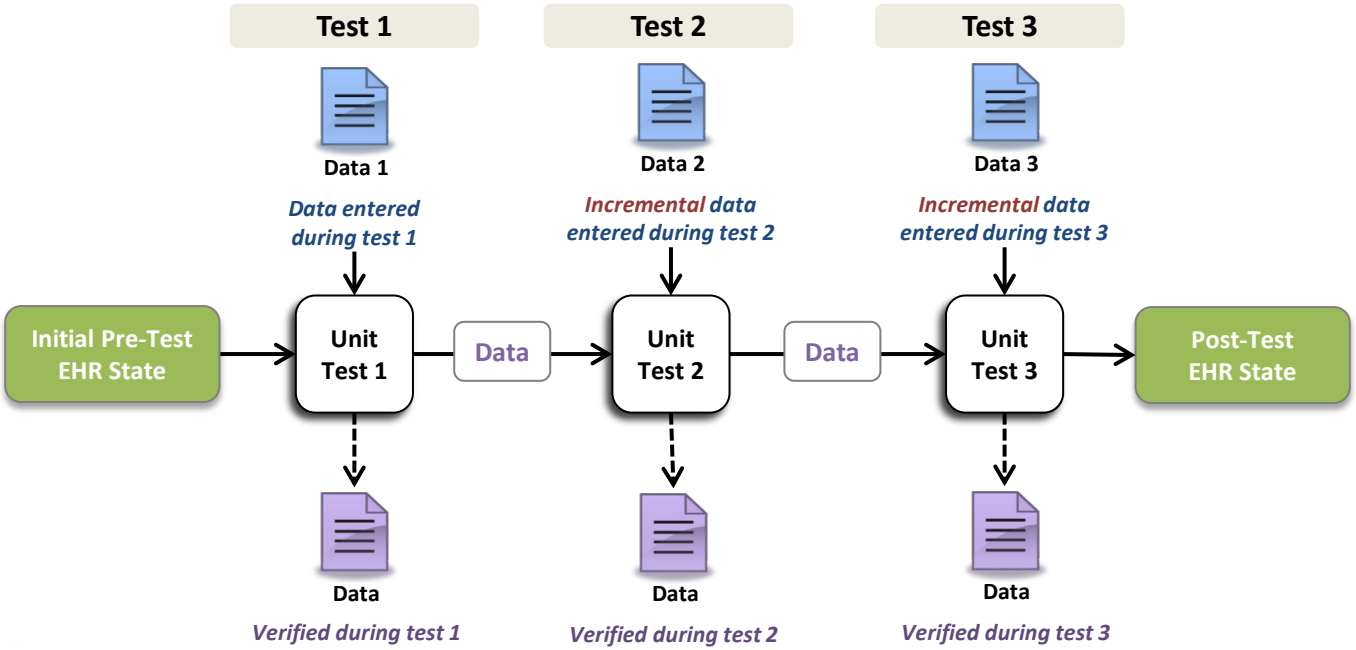
- Make testing **clinically plausible** (i.e. align with plausible clinical scenarios)
- Ensure ability to use **data across systems**
- Ensure ability to use **data within a system**
- **Increase value** of testing
- **Improve efficiency** of testing
- **Reduce setup** of testing
- Make testing **consistent** and **replicable**



Scenario-Based Testing Overview

Scenario-based testing:

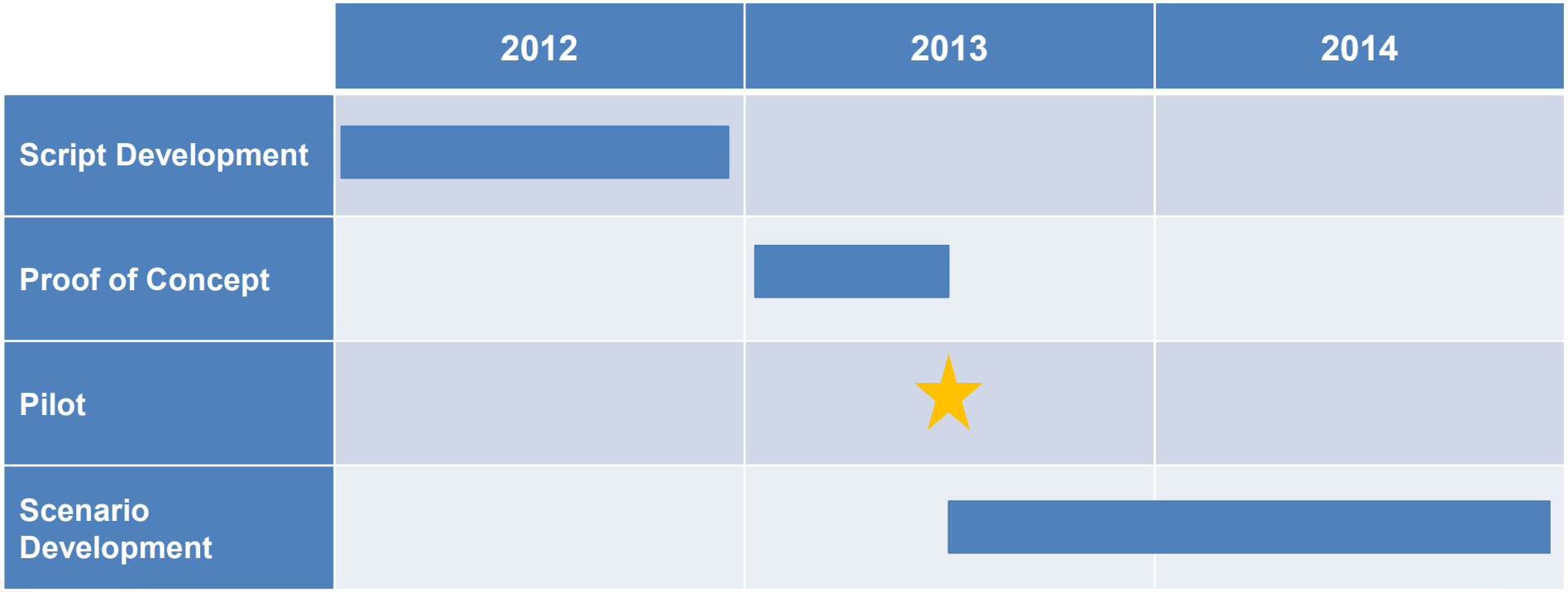
- Is an alternative (**optional) method** for the 2014 Edition Test Method
- Uses **dependent** tests with threaded test data (input) and result(s) (output)



Development

Scenario-based testing development began in 2012, and will continue into 2014

- Spring 2013: developed a proof of concept which included a clinically-plausible workflow for Interoperability: Intake



Pilot

ONC piloted a test scenario based on the Interoperability: Intake workflow developed in the spring

- Participants included an ATL and two vendors

Feedback was very positive – participants indicated that the scenario:

- Reduced the burden of testing setup for vendors and testers
- Made testing more efficient
- Could reduce testing times

Workflow

After the pilot, ONC outlined a larger workflow for the **2014 Edition Test Scenarios**

- The workflow follows a patient from their initial contact with a provider's office or hospital through their care and follow up
    - It also follows a provider or hospital through public health and clinical quality measure reporting

The workflow is a framework for testing products using a series of clinically-plausible scenarios

- ONC has outlined what criteria could be met by each scenario
- The pilot scenario is included in this workflow
- The workflow was reviewed with ONC clinical experts

Overview

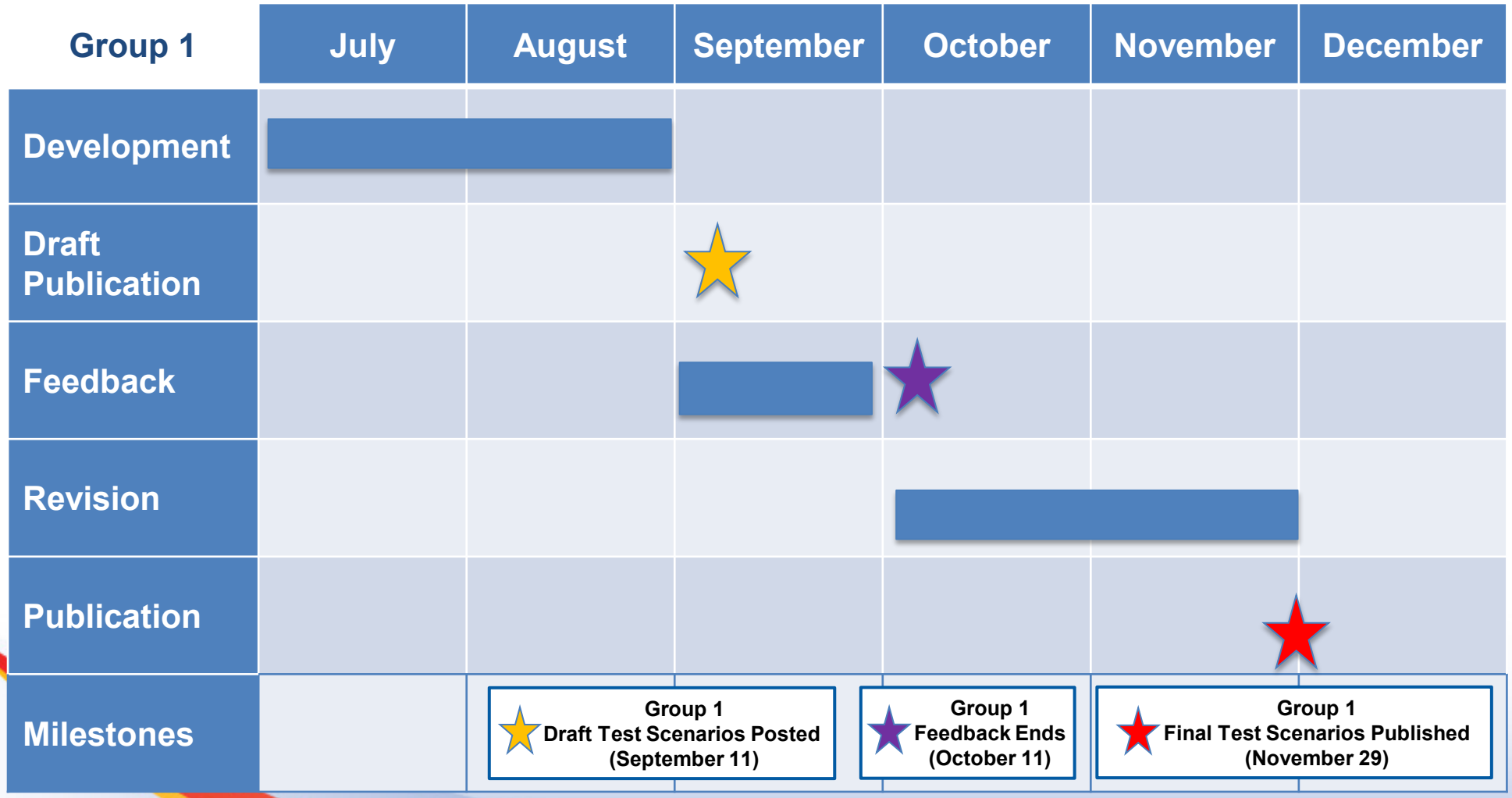
Group 1		
#	Scenario Name	Criteria Included
1	Encounter: Intake	a3, a5, a6, a7, f1, a11, a13, a17, f5, a4
2	Encounter: Interoperability Intake	b1, b4
3	Encounter: Care Ordering	a1, a2, b3, a10, a16
4	Encounter: Care Results	a12, b5, a8, a15, a9, e2
5	Encounter: Post-Care	a14, b7, b6, e3, e1, b2
Development: July – December 2013		

Group 2		
#	Scenario Name	Criteria Included
6	Reporting	c1, c2, c3, f2, f3, f4, f6
7	Privacy & Security	d1, d2, d3, d4, d5, d6, d7, d8, d9
8	System	g1, g2, g3, g4
Development: 2014		

Overview: Group 1 Development Timeline

ONC plans to develop the 2014 Edition Test Scenarios in **two groups**

- The first will be developed this year.



Overview: Goals

The 2014 Edition Test Scenarios will

- Be comprehensive: include **all** of the 2014 Edition EHR Certification Criteria in the two groups
- Be the first in a **library** of test scenarios

ONC requests feedback on the draft workflow, including scenario descriptions and outlines (criteria)

- Feedback on the criteria assignments by August 22
- Feedback on Group 1 draft test scenarios before October 4

Overview: Workflow Groups

ONC has drafted **a clinically-plausible workflow** to guide the development of the 2014 Edition Test Scenarios

- This workflow is intended to represent **one** way that **all** of the 2014 Edition EHR Certification Criteria could be included in a clinically-plausible workflow

The draft workflow includes **8** scenarios

Considerations:

- It does **not** represent the **only** way unit tests could be linked in a clinical workflow
- It does **not** imply anything about how providers should **use** CEHRT
- It **only** addresses the 2014 Edition EHR Certification Criteria
    - Future editions of the certification criteria could allow ONC to develop scenarios addressing other concerns

Overview: Workflow Descriptions

Group 1

Group 1 scenarios represent activities that are largely towards the clinical end of the spectrum and could be performed by members of the care team and/or patient

Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Encounter: Intake	Encounter: Interoperability Intake	Encounter: Care Ordering	Encounter: Care Results	Encounter: Post-Care

Development: July – December 2013

Group 2

Group 2 scenarios represent activities that are largely towards the administrative end of the spectrum and could be performed by administrative users

Scenario 6	Scenario 7	Scenario 8
Reporting	Privacy & Security	System

Development: 2014

Overview: Workflow Assumptions

ONC has outlined what criteria could be included in each scenario

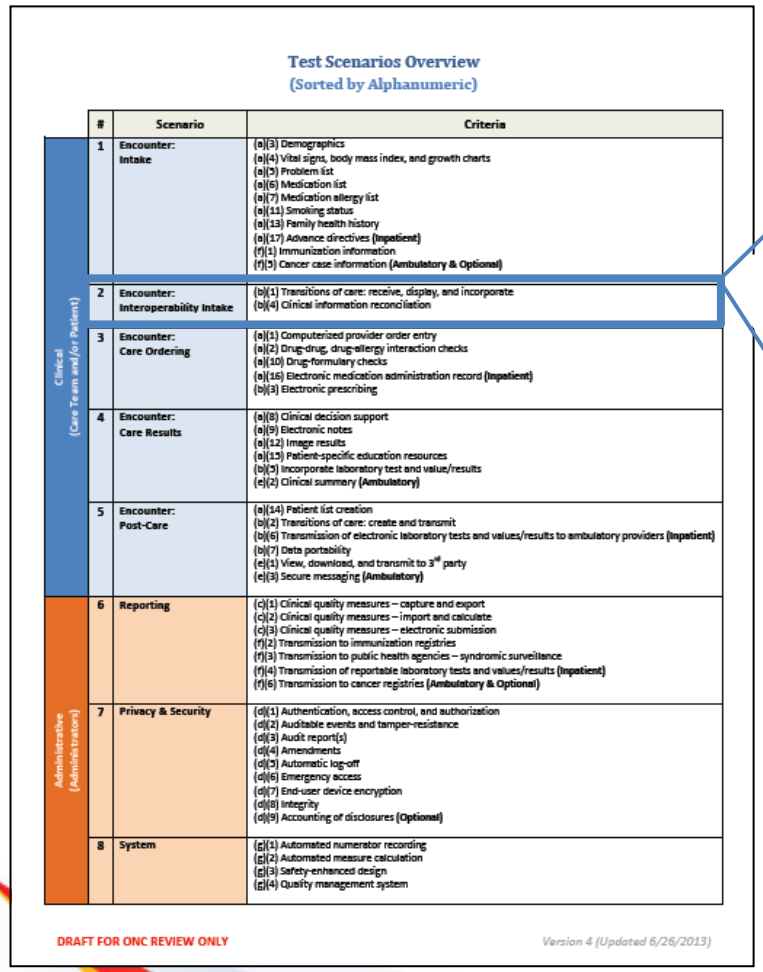
- In the outlines on the following slides, ONC assumes that testing will proceed sequentially through each scenario
- ONC will provide additional guidance for what additional criteria may be required if a scenario is not tested in sequence
  - Part of each test scenario procedure

Group 1: Scenarios

Group 1 includes **five scenarios**

Group 1				
Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 4**	**Scenario 5**
Encounter: Intake	**Encounter: Interoperability Intake**	**Encounter: Care Ordering**	**Encounter: Care Results**	**Encounter: Post-Care**
Actions which could be performed by any member of the care team or patient before the patient sees a provider.	Actions which could be taken to incorporate a summary of care document received from another provider or hospital before treating the patient.	Actions related to ordering care for the patient (medications, laboratory or imaging) during the care episode.	Actions related to the results of earlier care orders for the patient, provision of resources for the patient and provider, and visit notes.	Actions which could be performed after the encounter with the patient has ended, but are directly related to the provision of care to the specific patient, including the creation of summary of care records.
10 criteria	**2 criteria**	**5 criteria**	**6 criteria**	**6 criteria**

Group 1: Scenarios by Criteria



Test Scenarios Overview
(Sorted by Alphanumeric)

	#	Scenario	Criteria
Clinical (Care Team and/or Patient)	1	Encounter: Intake	(a)(3) Demographics (a)(4) Vital signs, body mass index, and growth charts (a)(5) Problem list (a)(6) Medication list (a)(7) Medication allergy list (a)(11) Smoking status (a)(13) Family health history (a)(17) Advance directives (Inpatient) (f)(1) Immunization information (f)(5) Cancer case information (Ambulatory & Optional)
	2	Encounter: Interoperability Intake	(b)(1) Transitions of care: receive, display, and incorporate (b)(4) Clinical information reconciliation
	3	Encounter: Care Ordering	(a)(1) Computerized provider order entry (a)(2) Drug-drug, drug-allergy interaction checks (a)(10) Drug-formulary checks (a)(16) Electronic medication administration record (Inpatient) (b)(3) Electronic prescribing
	4	Encounter: Care Results	(a)(8) Clinical decision support (a)(9) Electronic notes (a)(12) Image results (a)(13) Patient-specific education resources (b)(5) Incorporate laboratory test and value/results (e)(2) Clinical summary (Ambulatory)
	5	Encounter: Post-Care	(a)(14) Patient list creation (b)(2) Transitions of care: create and transmit (b)(6) Transmission of electronic laboratory tests and values/results to ambulatory providers (Inpatient) (b)(7) Data portability (e)(1) View, download, and transmit to 3rd party (e)(3) Secure messaging (Ambulatory)
Administrative (Administrators)	6	Reporting	(c)(1) Clinical quality measures – capture and export (c)(2) Clinical quality measures – import and calculate (c)(3) Clinical quality measures – electronic submission (f)(2) Transmission to immunization registries (f)(3) Transmission to public health agencies – syndromic surveillance (f)(4) Transmission of reportable laboratory tests and values/results (Inpatient) (f)(6) Transmission to cancer registries (Ambulatory & Optional)
	7	Privacy & Security	(d)(1) Authentication, access control, and authorization (d)(2) Auditable events and tamper-resistance (d)(3) Audit report(s) (d)(4) Amendments (d)(5) Automatic log-off (d)(6) Emergency access (d)(7) End-user device encryption (d)(8) Integrity (d)(9) Accounting of disclosures (Optional)
	8	System	(g)(1) Automated numerator recording (g)(2) Automated measure calculation (g)(3) Safety-enhanced design (g)(4) Quality management system

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Version 4 (Updated 6/26/2013)

#	Name	Criteria Included
1	**Encounter: Intake Interoperability**	(b)(1) Transition of care: receive, display and incorporate (b)(4) Clinical information reconciliation

Example

Cover Page

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Test Scenario Procedure for Encounter: Interoperability Intake

This document describes the test scenario procedure for evaluating conformance of electronic health record (EHR) technology 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 test scenario procedure evaluates conformance to these certification criteria in a clinically plausible workflow. The document[1] references test procedures and derived test requirements with traceability to the normative certification criteria as described in the Test Scenario Procedure Overview document located at http://www.healthit.gov/certification (navigation: 2014 Edition Testing and Certification > 2014 Edition Test Method > 2014 Edition Test Scenarios > 2014 Edition Draft Test Scenarios). The test scenario procedures may be updated to reflect on-going feedback received during the certification activities.

The Department of Health and Human Services (HHS)/Office of the National Coordinator for Health Information Technology (ONC) has defined the standards, implementation guides and certification criteria used in the test procedures within the test scenario 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 Health Information Technology (HIT) Certification Program[2], is carried out by National Voluntary Laboratory Accreditation Program (NVLAP)-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)*.

Under the ONC HIT Certification Program, scenario-based testing is an alternative method for testing and certification to the 2014 Edition EHR Certification Criteria. Questions or concerns regarding the ONC HIT Certification Program should be directed to ONC at ONC.Certification@hhs.gov.

Test Scenario Overview

Unit-based testing is a minimum requirement for testing and certification to the 2011 and 2014 Edition EHR Certification Criteria. Scenario-based testing is an alternative method for testing and certification to the 2014 Edition EHR Certification Criteria. As shown in Figure 1, unit-based testing consists of independent tests with individual test data (input) and results (output), while scenario-based testing links unit tests using threaded test data.

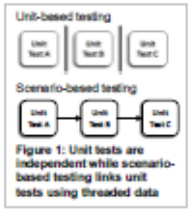

Figure 1: Unit tests are independent while scenario-based testing links unit tests using threaded data

[1] Disclaimer: Certain commercial products may be identified in this document. Such identification does not imply recommendation or endorsement by ONC.

[2] 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.

Script

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Test Scenario Narrative: Encounter: Interoperability Intake

This test scenario represents the following clinically plausible scenarios:

Ambulatory

Patient is seen by Provider. During this ambulatory visit, demographics and medication, medication allergy, and problem lists for the Patient are recorded, changed, and accessed in the Provider's EHR. This portion of the scenario tests:

- §170.314(a)(3) Demographics
- §170.314(a)(6) Medication list
- §170.314(a)(7) Medication allergy list
- §170.314(a)(5) Problem list

Patient is referred to Provider upon discharge from Hospital. During transition of care, a C-CDA formatted referral summary for the Patient is received, displayed, and incorporated in the Provider's EHR. This portion of the scenario tests:

- §170.314(b)(1) Transitions of care – receive, display, and incorporate transition of care/referral summaries

During incorporation of the referral summary (C-CDA), clinical information reconciliation is performed between the medication, medication allergy, and problem list stored in the EHR and those contained in the C-CDA. Upon completion of the clinical information reconciliation, the reconciled medication, medication allergy, and problem list are stored in the Provider's EHR. This portion of the scenario tests:

- §170.314(b)(4) Clinical information reconciliation

Inpatient

Patient is admitted to Hospital. During this hospitalization, demographics and medication, medication allergy, and problem lists for the Patient are recorded, changed, and accessed in the Hospital's EHR. This portion of the scenario tests:

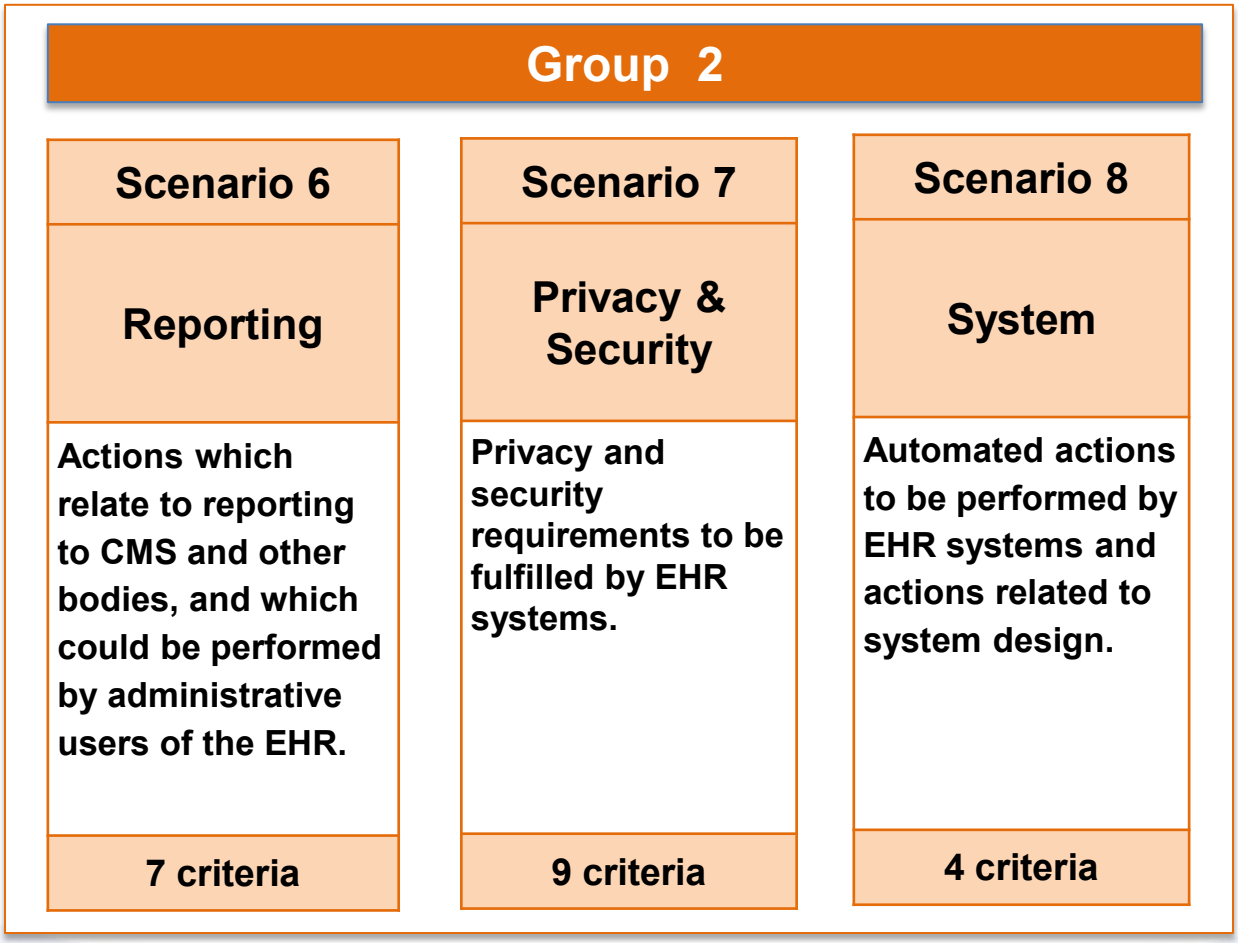
- §170.314(a)(3) Demographics
- §170.314(a)(6) Medication list
- §170.314(a)(7) Medication allergy list
- §170.314(a)(5) Problem list

Patient is directly admitted to Hospital from an ambulatory visit with Provider. During transition of care, a C-CDA formatted referral summary is received, displayed, and incorporated in the Hospital's EHR. This portion of the scenario tests:

- §170.314(b)(1) Transitions of care – receive, display, and incorporate transition of care/referral summaries

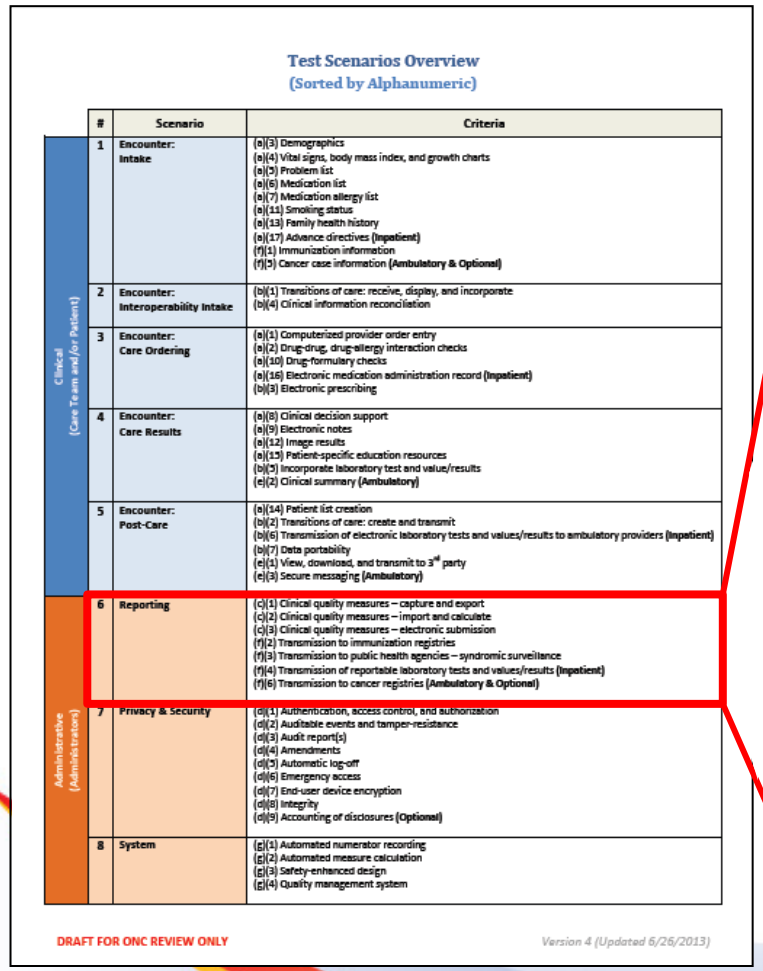
Group 2: Scenarios

Group 2 will include **three scenarios**



Group 2: Scenarios by Criteria

Group 2 will be developed in 2014, but ONC has already outlined what criteria could be included in each scenario



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#	Name	Criteria Included
6	**Reporting**	(c)(1) Clinical quality measures – capture and export (c)(2) Clinical quality measures – import and calculate (c)(3) Clinical quality measures – electronic submission (f)(2) Transmission to immunization registries (f)(3) Transmission to public health agencies – syndromic surveillance (f)(4) Transmission of reportable laboratory tests and values/results *(Inpatient)* (f)(6) Transmission to cancer registries *(Ambulatory & Optional)*

The criteria included above are sorted by the order in which they will be performed during the scenario

Next Steps

September

- Draft test scenarios posted September 11
- Feedback may be submitted to ONC.Certification@hhs.gov; please include “2014 Edition Draft Test Scenarios” in the subject line

October

- Feedback on draft test scenarios ends October 11