

Test Procedure for §170.314(a)(1) Computerized provider order entry

This document describes the test 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 document¹ is organized by test procedure and derived test requirements with traceability to the normative certification criteria as described in the Overview document located at <http://www.healthit.gov/certification> (navigation: 2014 Edition Test Method). The test 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 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 Health Information Technology (HIT) Certification Program², 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*).

Questions or concerns regarding the ONC HIT Certification Program should be directed to ONC at ONC.Certification@hhs.gov.

CERTIFICATION CRITERION

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. This certification criterion is included in the definition of a Base EHR.

§170.314(a)(1) Computerized provider order entry. Enable a user to electronically record, change, and access the following order types, at a minimum:

- (i) Medications;
- (ii) Laboratory; and
- (iii) Radiology/imaging.

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.

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 unchanged with refinements from the 2011 Edition. This certification criterion meets the three factors of unchanged certification criteria: (1) the certification criterion includes only the same capabilities that were specified in previously adopted certification criteria, (2) the certification criterion's capabilities apply to the same setting as they did in previously adopted certification criteria, and (3) the certification criterion remains designated as "mandatory," or it is re-designated as "optional," for the same setting for which it was previously adopted certification criterion.

2014 EDITION PREAMBLE LANGUAGE

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 (September 4, 2012) where the computerized provider order entry certification criterion is discussed:

- "...we do clarify that the change in the CPOE denominator affects the "automated measure calculation" certification criterion (§ 170.314(g)(2)), which is a revised certification criterion for the 2014 Edition EHR certification criteria."
- "This certification criterion focuses on enabling a user to electronically record, change, and access, at a minimum, medication, laboratory and radiology/imaging orders. It does not focus on transmission of those orders."

2011 EDITION PREAMBLE LANGUAGE

Per Section III.D of the preamble of the Health Information Technology: Initial Set of Standards, Implementation Specifications, and Certification Criteria for Electronic Health Record Technology, Final Rule (July 28, 2010) where the computerized provider order entry certification criterion is discussed:

- "We clarify that the adopted certification criteria related to CPOE pertain only to the ordering, and not to the delivery of results (reports or images)."

CHANGES FROM 2011 TO 2014 EDITION

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 (September 4, 2014) where the computerized provider order entry certification criterion is discussed:

- “We proposed a CPOE certification criterion that merged the separate ambulatory and inpatient CPOE certification criteria in the 2011 Edition EHR certification criteria into one criterion because they those [sic] certification criteria are identical.”
- “We proposed to replace the terms “modify” and “retrieve” with “change” and “access,” respectively.”
- “We also proposed to remove the term “store” from the criterion because it is redundant with our interpretation of the term “record.””
- “...we proposed to move the phrase “at a minimum” in the certification criterion to eliminate any possible ambiguity as to what the phrase modifies. As proposed, the certification criterion made clear that the phrase modifies the order types and not the terms “record,” “change,” and “access.””

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 EHR technology to enable a user to electronically record, change, and access the following order types, at a minimum:

- (i) Medications;
- (ii) Laboratory; and
- (iii) Radiology/imaging.

The test procedure is not prescriptive about the method used to change an order. For example, changing an order does not require changing an existing instance of an order. Change may be accomplished through discontinuing/canceling an existing order and entering a new order.

ONC supplies part of the test data and the Vendor supplies part of the test data for this test procedure.

This test procedure is organized into three sections:

- **Record** – evaluates the capability to electronically enter orders for medications, laboratory, and radiology/imaging within the EHR system
 - The Tester enters the ONC-supplied test data orders for medications, laboratory, and radiology/imaging
 - The Tester verifies that the orders are recorded in the EHR
- **Change** – evaluates the capability for a user to electronically change entered orders for medications, laboratory, and radiology/imaging in the EHR
 - The Tester displays the entered orders for medications, laboratory, and radiology/imaging
 - Tester changes the medications, laboratory, and radiology/imaging orders
 - The Tester verifies that the changed orders are accurate and complete

- **Access** – evaluates the capability to access and display the orders that have been previously entered into the EHR
 - The Tester displays the orders for medications, laboratory, and radiology/ imaging entered during the test
 - The Tester verifies that the displayed order data are accurate and complete

For EHR technology **targeted to the ambulatory setting**, the following derived test requirements apply:

- DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting
- DTR170.314(a)(1) – 2: Electronically Change Orders in an Ambulatory Setting
- DTR170.314(a)(1) – 3: Electronically Access Orders in an Ambulatory Setting

For c EHR technology **targeted to the inpatient setting**, the following derived test requirements apply:

- DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting
- DTR170.314(a)(1) – 5: Electronically Change Orders in an Inpatient Setting
- DTR170.314(a)(1) – 6: Electronically Access Orders in an Inpatient Setting

For EHR technology **targeted to both settings**, the following derived test requirements apply:

- DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting
- DTR170.314(a)(1) – 2: Electronically Change Orders in an Ambulatory Setting
- DTR170.314(a)(1) – 3: Electronically Access Orders in an Ambulatory Setting
- DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting
- DTR170.314(a)(1) – 5: Electronically Change Orders in an Inpatient Setting
- DTR170.314(a)(1) – 6: Electronically Access Orders in an Inpatient Setting

REFERENCED STANDARDS

None

NORMATIVE TEST PROCEDURES – AMBULATORY SETTING

Derived Test Requirements

DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting

DTR170.314(a)(1) – 2: Electronically Change Orders in an Ambulatory Setting

DTR170.314(a)(1) – 3: Electronically Access Orders in an Ambulatory Setting

DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting

Required Vendor Information

VE170.314(a)(1) – 1.01: Vendor shall identify a patient with an existing record in the EHR to be used for this test

VE170.314(a)(1) – 1.02: Vendor shall identify the EHR function(s) that are available to: 1) select the patient, 2) enter orders for medications, laboratory, and radiology/imaging, 3)

change orders for medications, laboratory, and radiology/imaging, and 4) access orders for medications, laboratory, and radiology/imaging in an ambulatory setting

Required Test Procedure

TE170.314(a)(1) – 1.01: Tester shall select order test data from one ONC-supplied test data set in TD170.314(a)(1) – 1

TE170.314(a)(1) – 1.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and enter orders from the selected test data set in TD170.314(a)(1) – 1 for

- Medication
- Laboratory
- Radiology/imaging

TE170.314(a)(1) – 1.03: Using the Inspection Test Guide (below), the Tester shall verify that the orders have been entered correctly and without omission

Inspection Test Guide

IN170.314(a)(1) – 1.01: Using the data in the selected ONC-supplied test data set in TD170.314(a)(1) – 1, Tester shall verify that the order test data are entered correctly and without omission

IN170.314(a)(1) – 1.02: Tester shall verify that the order data are recorded in the patient's record for data elements listed in TE170.314(a)(1) – 1.02

DTR170.314(a)(1) – 2: Electronically Change Orders in an Ambulatory Setting

Required Vendor Information

- As defined in DTR170.314(a)(1) – 1, no additional information is required

Required Test Procedure

TE170.314(a)(1) – 2.01: Tester shall select order test data from one ONC-supplied test data set in TD170.314(a)(1) – 2 that corresponds to the data set selected for DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting

TE170.314(a)(1) – 2.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record, shall display the order data entered during the DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting test, and shall change the previously entered orders for the data elements listed in TE170.314(a)(1) – 1.02

TE170.314(a)(1) – 2.03: Using the Inspection Test Guide (below), the Tester shall verify that the orders that were entered in TE170.314(a)(1) – 2.02 have been entered correctly and without omission

Inspection Test Guide

IN170.314(a)(1) – 2.01: Using the data in the selected ONC-supplied test data set in TD170.314(a)(1) – 2, Tester shall verify that the medication, laboratory, and radiology/imaging order

data entered during the DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting test are accessed and changed correctly and without omission

IN170.314(a)(1) – 2.02: Tester shall verify that the changed orders are recorded in the patient record correctly, including the data elements listed in TE170.314(a)(1) – 1.02

DTR170.314(a)(1) – 3: Electronically Access Orders in an Ambulatory Setting

Required Vendor Information

- As defined in DTR170.314(a)(1) – 1, no additional information is required

Required Test Procedure

TE170.314(a)(1) – 3.01: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and display the orders the Tester entered during the DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting test and changed during the DTR170.314(a)(1) – 2: Electronically Change Orders in an Ambulatory Setting test for the data elements listed in TE170.314(a)(1) – 1.02

TE170.314(a)(1) – 3.02: Using the Inspection Test Guide (below), the Tester shall verify that the order data display correctly and without omission

Inspection Test Guide

IN170.314(a)(1) – 3.01: Using the data in the ONC-supplied test data set in TD170.314(a)(1) – 3 that corresponds to the data set selected for DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting, Tester shall verify that the order data entered during the DTR170.314(a)(1) – 1: Electronically Record Orders in an Ambulatory Setting test and changed during the DTR170.314(a)(1) – 2: Electronically Change Orders in an Ambulatory Setting test display correctly and without omission, including the data elements listed in TE170.314(a)(1) – 1.02

NORMATIVE TEST PROCEDURES – INPATIENT SETTING

Derived Test Requirements

DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting

DTR170.314(a)(1) – 5: Electronically Change Orders in an Inpatient Setting

DTR170.314(a)(1) – 6: Electronically Access Orders in an Inpatient Setting

DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting

Required Vendor Information

VE170.314(a)(1) – 4.01: Vendor shall identify a patient with an existing record in the EHR to be used for this test

VE170.314(a)(1) – 4.02: Vendor shall identify the EHR function(s) that are available to: 1) select the patient, 2) enter orders for medications, laboratory, and radiology/imaging, 3) change orders for medications, laboratory, and radiology/imaging, and 4) access orders for medications, laboratory, and radiology/imaging in an inpatient setting

Required Test Procedure

TE170.314(a)(1) – 4.01: Tester shall select order test data from one ONC-supplied test data set in TD170.314(a)(1) – 4

TE170.314(a)(1) – 4.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and enter orders from the selected test data set in TD170.314(a)(1) – 4 for

- Medications
- Laboratory
- Radiology/imaging

TE170.314(a)(1) – 4.03: Using the Inspection Test Guide (below), the Tester shall verify that the orders have been entered correctly and without omission

Inspection Test Guide

IN170.314(a)(1) – 4.01: Using the data in the selected ONC-supplied test data set in TD170.314(a)(1) – 4, Tester shall verify that the order test data are entered correctly and without omission

IN170.314(a)(1) – 4.02: Tester shall verify that the order data are recorded in the patient's record for the data elements listed in TE170.314(a)(1) – 4.02

DTR170.314(a)(1) – 5: Electronically Change Orders in an Inpatient Setting

Required Vendor Information

- As defined in DTR170.314(a)(1) – 4, no additional information is required

Required Test Procedure

TE170.314(a)(1) – 5.01: Tester shall select order test data from one ONC-supplied test data set in TD170.314(a)(1) – 5 that corresponds to the data set selected for DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting

TE170.314(a)(1) – 5.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record, shall display the order data entered during the DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting test, and shall change the previously entered orders for the data elements listed in TE170.314(a)(1) – 4.02

TE170.314(a)(1) – 5.03: Using the Inspection Test Guide (below), the Tester shall verify that the orders that were entered in TE170.314(a)(1) – 5.02 have been entered correctly and without omission

Inspection Test Guide

IN170.314(a)(1) – 5.01: Using the data in the selected ONC-supplied test data set in TD170.314(a)(1) – 5, Tester shall verify that the medication, laboratory, and radiology/imaging order

data entered during the DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting test are accessed and changed correctly and without omission

IN170.314(a)(1) – 5.02: Tester shall verify that the changed orders are recorded in the patient record correctly, including the data elements listed in TE170.314(a)(1) – 4.02

DTR170.314(a)(1) – 6: Electronically Access Orders in an Inpatient Setting

Required Vendor Information

- As defined in DTR170.314(a)(1) – 4, no additional information is required

Required Test Procedure

TE170.314(a)(1) – 6.01: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and display the orders the Tester entered during the DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting test and changed during the DTR170.314(a)(1) – 5: Electronically Change Orders in an Inpatient Setting test for the data elements listed in TE170.314(a)(1) – 4.02

TE170.314(a)(1) – 6.02: Using the Inspection Test Guide (below), the Tester shall verify that the order data display correctly and without omission

Inspection Test Guide

IN170.314(a)(1) – 6.01: Using the data in the ONC-supplied test data set in TD170.314(a)(1) – 6 that corresponds to the data set selected for DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting, Tester shall verify that the order data entered during the DTR170.314(a)(1) – 4: Electronically Record Orders in an Inpatient Setting test and changed during the DTR170.314(a)(1) – 5: Electronically Change Orders in an Inpatient Setting test display correctly and without omission, including the data elements listed in TE170.314(a)(1) – 4.02

TEST DATA

ONC- and Vendor-supplied test data are provided with the test procedure to ensure that the applicable requirements identified in the criteria can be adequately evaluated for conformance, as well as to provide consistency in the testing process across multiple National Voluntary Laboratory Accreditation Program (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 test procedure requires or permits the use of vendor-supplied 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 applicable requirements identified in the criterion can be adequately evaluated for conformance and that the test data provides a comparable level of robustness. 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.

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 applicable 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 Vendor-supplied test data, the Tester shall address the following:

- Vendor-supplied test data shall ensure that the requirements identified in the criterion can be adequately evaluated for conformance.
- Vendor-supplied test data shall strictly focus on meeting the basic capabilities required of an EHR relative to the certification criterion rather than exercising the full breadth/depth of capability that an installed EHR might be expected to support.
- Tester shall record as part of the test documentation the specific Vendor-supplied test data that was utilized for testing.

For additional information regarding the provided test data for use in this test procedure:

- Test Data for §170.314(a)(1) Computerized provider order entry available at <http://www.healthit.gov/certification> (navigation: 2014 Edition Test Method)

CONFORMANCE TEST TOOLS

None

Document History

Version Number	Description of Change	Date
1.0	Released for public comment	September 7, 2012
1.1	Delivered for National Coordinator Approval	December 4, 2012
1.2	Posted Approved Test Procedure	December 14, 2012