Test Procedure for §170.306 (a) Computerized provider order entry

This document describes the draft 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 Interim Final Rule (IFR) as published in the Federal Register on January 13, 2010. The document 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://healthcare.nist.gov/docs/TestProcedureOverview_v1.pdf. These test procedures will be updated to reflect the certification criteria defined in the ONC Final Rule.

CERTIFICATION CRITERIA

§170.306 (a) Computerized provider order entry. Enable a user to electronically record, store, retrieve, and manage, at a minimum, the following order types:

(1) Medications;
(2) Laboratory;
(3) Radiology/Imaging;
(4) Blood bank;
(5) Physical therapy
(6) Occupational therapy;
(7) Respiratory therapy;
(8) Rehabilitation therapy;
(9) Dialysis;
(10) Provider consults;
(11) Transfer; and
(12) Discharge

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[1] to enable a user to electronically record, store, retrieve, and manage the following order types in an inpatient setting:

(1) Medications;
(2) Laboratory;
(3) Radiology/Imaging;
(4) Blood bank;
(5) Physical therapy
(6) Occupational therapy;
(7) Respiratory therapy;

[1] Department of Health and Human Services, 45 CFR Part 170 Proposed Establishment of Certification Programs for Health Information Technology, Proposed Rule, March 10, 2010.

(8) Rehabilitation therapy;
(9) Dialysis;
(10) Provider consults;
(11) Transfer; and
(12) Discharge

Per the IFR criteria, this test procedure does not include electronic transmission of the orders to other health information systems.

This test procedure is organized into four sections:

- Record - evaluates the capability to enter orders into the EHR
  - The Tester enters the NIST-supplied test data orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge

- Store - evaluates the capability to electronically store orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge, within the EHR system
  - The Tester verifies that the orders are stored in the EHR

- Retrieve - evaluates the capability to retrieve and display the orders that have been previously entered into the EHR
  - The Tester displays the orders for medications, laboratory, radiology/ imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge entered during the test
  - The Tester validates that the displayed order data are accurate and complete

- Manage - evaluates the capability to electronically discontinue entered orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge
  - The Tester displays the entered orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge
  - The Tester discontinues entered orders for medications, laboratory, radiology/ imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge
  - The Tester validates that the entered orders have a discontinued status

REFERENCED STANDARDS

None

NORMATIVE TEST PROCEDURES

Derived Test Requirements

DTR170.306.a – 1: Electronically Record and Store Orders

DTR170.306.a – 2: Electronically Retrieve Orders

DTR170.306.a – 3: Electronically Manage Orders

DTR170.306.a – 1: Electronically Record and Store Orders

Required Vendor Information

VE170.306.a – 1.01: Vendor shall identify a patient with an existing record in the EHR to be used for this test

VE170.306.a – 1.02: Vendor shall identify the EHR function(s) that are available to: 1) select the patient, 2) enter and store orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge, 3) retrieve orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge, and 4) manage orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge

Required Test Procedure:

TE170.306.a – 1.01: Tester shall select order test data from NIST-supplied test data sets

TE170.306.a – 1.02: Using the EHR function(s) identified by the Vendor, the Tester shall select the patient's existing record and enter orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge

TE170.306.a – 1.03: Using the NIST-supplied Inspection Test Guide, the Tester shall verify that the orders have been entered correctly and without omission

Inspection Test Guide

IN170.306.a – 1.01: Tester shall verify that all of the order data are entered correctly and without omission

IN170.306.a – 1.02: Tester shall verify that the order data are stored in the patient's record for:

- medications
- laboratory

- radiology/imaging
- blood bank
- physical therapy
- occupational therapy
- respiratory therapy
- rehabilitation therapy
- dialysis
- provider consults
- transfer
- discharge

DTR170.306.a – 2: Electronically Retrieve Orders

Required Vendor Information

- As defined in DTR170.306.a – 1, no additional information is required

Required Test Procedure:

TE170.306.a – 2.01: 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 Record and Store Orders test for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge

TE170.306.a – 2.02: Using the NIST-supplied Inspection Test Guide, the Tester shall verify that the order data display correctly and without omission

Inspection Test Guide:

IN170.306.a – 2.01: Tester shall verify that the order data entered during the Record and Store Orders test display correctly and without omission, including

- medications
- laboratory
- radiology/imaging
- blood bank
- physical therapy
- occupational therapy
- respiratory therapy
- rehabilitation therapy
- dialysis
- provider consults
- transfer

- discharge

DTR170.306.a – 3: Electronically Manage Orders

Required Vendor Information

- As defined in DTR170.306.a – 1, no additional information is required

Required Test Procedure:

TE170.306.a – 3.01: 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 Record and Store Orders test, and shall discontinue the previously entered orders for medications, laboratory, radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge

TE170.306.a – 3.02: Using the NIST-supplied Inspection Test Guide, the Tester shall verify that the orders that were discontinued display correctly with a discontinued status

Inspection Test Guide

IN170.306.a – 3.01: Tester shall verify that the medication, laboratory, and radiology/imaging, blood bank, physical therapy, occupational therapy, respiratory therapy, rehabilitation therapy, dialysis, provider consults, transfer, and discharge order data entered and stored during the Record and Store Orders test can be accessed and discontinued

IN170.306.a – 3.02: Tester shall verify that the discontinued orders are stored with a discontinued status in the patient record, including

- medications
- laboratory
- radiology/imaging
- blood bank
- physical therapy
- occupational therapy
- respiratory therapy
- rehabilitation therapy
- dialysis
- provider consults
- transfer
- discharge

EXAMPLE TEST DATA

Medication Orders

Medication Brand Name (generic name)	Dose	Form	Route	Frequency
Scheduled				
Zestril (lisinopril)	30 mg	Tablet	By mouth (po)	Daily
Plavix (clopidogrel)	75 mg	Tablet	By mouth (po)	Daily
Norvasc (amlodipine)	5 mg	Tablet	By mouth (po)	Daily
Macrobid (nitrofurantoin)	100 mg	Tablet	By mouth (po)	Daily
Colace (docusate)	100 mg	Capsule	By mouth (po)	2 times per day
Esidrix (hydrocholorothiazide)	50 mg	Tablet	By mouth (po)	daily
Klor-Con (potassium chloride)	10 mEq	Tablet	By Mouth (po)	2 times per day
Catapres (clonidine hydrochloride)	0.1 mg	Tablet	By mouth (po)	2 times per day
Cardura (doxazosin mesylate)	2 mg	Tablet	By mouth (po)	Daily
Atrovent inhaler (ipratropium bromide monhydrate)	2 puffs	Aerosol	By oral inhalation	4 times per day
Gentamicin (gentamicin sulfate)	200mg	Solution	Intravenous Piggy Back (IVPB)	Every 6 hours
Vancomycin (vancomycin hydrochloride)	1 gram	Solution	Intravenous Piggy Back (IVPB)	Every 12 hours
Tazicef (ceftazidime pentahydrate)	2 grams	Solution	Intravenous Piggy Back (IVPB)	Every 8 hours
Ampicillin (ampicillin sodium)	2 grams	Solution	Intravenous Piggy Back (IVPB)	Every 4 hours
PRN				
Darvocet-N (propoxyphene napsylate and acetaminophen)	100 mg	Tablet	By mouth (po)	Every 4-6 hours as needed for pain
Albuterol inhaler (albuterol sulfate)	2 puffs	Aerosol	By oral inhalation	Every 4-6 hours as needed for respiratory distress
Dramamine (dimenhydrinate)	50 mg	Tablet	By mouth (po)	Every 4 hours as needed for nausea
Tylenol (acetaminophen)	325 mg	Tablet	By mouth (po)	Every 4 hours as needed for fever greater than 38.3 C
Milk of Magnesia (magnesium hydroxide)	30 ml	Solution	By mouth (po)	Once daily as needed for constipation

Laboratory Orders

Test Name	Frequency
Complete Blood Count w/ Differential (CBC)	Routine
Urinalysis	Routine
Total cholesterol	Routine
HDL cholesterol	Routine
LDL cholesterol	Routine
Triglycerides	Routine

Radiology/Imaging Orders

Test Name	Indication	Frequency
Chest X-ray PA and Lateral	Post-Lung Resection	STAT
MRI of Thorax without contrast	Trauma	Routine
CAT Scan of Brain with and without contrast	Severe Traumatic Brain Injury	ASAP
Ultrasound of Left Breast	Follow-up to Mammogram	Routine
Vascular Ultrasound Left Upper Extremity	Swelling of left arm	ASAP

Blood Bank Orders

Order Name	Indication	Frequency
Type & Cross 2 units Red Blood Cells	Hb <7 g/dl	STAT
Type & Screen	Potential significant blood loss	Routine
Red Blood Cells, 2 units	Trauma, acute blood loss	STAT
Fresh Frozen Plasma, 1 unit	PT, PTT > 1.5 x normal	ASAP
Platelets	Intraoperative bleeding	STAT

Physical Therapy Orders

Order Name	Frequency
Evaluation and Treatment for Range of Motion to Right Wrist	ASAP
Bilateral Lower-extremity Strengthening	4 times per day
Gait Training Post-Stroke	2 times per day
Chest Physiotherapy Post-Thoracotomy	4 times per day
Evaluation and Instruction for Mobility	Routine

Occupational Therapy Orders

Order Name	Frequency
Evaluate for Work Conditioning Program	Routine
Activities of Daily Living (ADL) Re-Training	Routine
Evaluate and Instruct for Sensory Dysfunction	Routine
Evaluate and Instruct for Ankle-Foot Orthotic Use	Routine
Evaluate and Instruct for Bath Chair Adaptive Device	Routine

Respiratory Therapy Orders

Order Name	Frequency
Oxygen therapy 2l/min via nasal cannula	Continuous
Aerosol therapy	4 times per day
Bedside Spirometry	every 2 hours while awake
SpO_2 Check	daily while on room air
Oxymetry with Activities of Daily Living (ADL)	2 times starting tomorrow

Rehabilitation Therapy Orders

Order Name	Frequency
Stroke Rehabilitation Team Assess and Treat	Routine
Cardiac Rehabilitation Team Assess and Treat	Routine
Speech Rehabilitation Team Assess and Treat	Routine
Auditory Rehabilitation Team Assess for Cochlear Implant	Routine
Brain Injury Rehabilitation Assessment	Routine

Dialysis Orders

Order Information	Frequency
Peritoneal Dialysis:	
▪ Bags #1 and #2: 1.5% dextrose dialysate, 2 liters, perform two in and out flushes, no dwell time	ASAP after initial lab work
▪ Bag #3: 1.5% dextrose dialysate, 2 liters, with Cephazoline 1 gm intraperitoneal and Ceftazidime 1 gm intraperitoneal, dwell time 6 hours or longer	STAT post flushes
▪ Heparin 1,000 units/liter of dialysate in each intraperitoneal exchange starting with Bag #3	Continuous starting with Bag #3
▪ Continue to perform cycles with1.5% dextrose dialysate, 2 liters, 5-10 minutes to instill, 30-40 minutes dwell, 10-15 minutes drain time	Continuous
▪ Continue Cephazoline 1 gm intraperitoneal and Ceftazidime 1 gm intraperitoneal in one 2-liter 1.5% dextrose dialysate bag exchange, dwell time 6 hours or longer	Daily
Peritoneal Dialysis:	
▪ Bags #1 and #2: 1.5% dextrose dialysate, 2 liters, perform two in and out flushes, no dwell time	ASAP after initial lab work
▪ Bag #3: 1.5% dextrose dialysate, 2 liters, with Gentamicin 33 mg intraperitoneal and Vancomycin 2 gm intraperitoneal, dwell time 6 hours or longer	STAT post flushes
▪ Heparin 1,000 units/liter of dialysate in each intraperitoneal exchange starting with Bag #3	Continuous starting with Bag #3
▪ Continue to perform cycles with1.5% dextrose dialysate, 2 liters, 5-10 minutes to instill, 30-40 minutes dwell, 10-15 minutes drain time	Continuous
▪ Continue Gentamicin 33 mg intraperitoneal in one 2-liter 1.5% dextrose dialysate bag exchange, dwell time 6 hours or longer	Daily
▪ Continue Vancomycin 2 gm intraperitoneal in one 2-liter 1.5% dextrose dialysate bag exchange, dwell time 6 hours or longer	Every 5 days

Provider Consult Orders

Order Name	Indication	Frequency
Neurosurgery Consult	Neck pain, weakness in right hand	Stat
Cardiology Consult	Chest pain	ASAP
Endocrinology Consult	Thyroid nodules	ASAP
Behavioral Health Consult	Depression	ASAP
Orthopedic Consult	Mild Scoliosis	ASAP

Transfer Orders

Order Name	Frequency
Transfer to Medical Unit	Tomorrow AM
Transfer to Coronary Care Unit	STAT
Transfer to Cardiac Intermediate Care Unit	Today
Transfer to Surgical Unit	Today
Transfer to Behavioral Health Unit	STAT

Discharge Orders

Order Name	Frequency
Discharge to Home Follow-up with referring physician 3 days post-discharge, call for appointment	Tomorrow AM
Discharge to Rehabilitation Center Physical Therapy to Evaluate and Treat for left sided weakness	Today
Discharge to Home with Home Healthcare Services Referral	Today
Discharge to Skilled Nursing Facility	Tomorrow
Discharge to Nursing Home	Tomorrow

CONFORMANCE TEST TOOLS

None