

2020-05 PACIO-eLTSS Post-Acute Care Transition Summary

Submitting WG/Project/Implementer Group



PACIO Project

CMS, eLTSS

Track Resources:

- **CMS Data Element Library FHIR API Prototype**
 - Implementation Guide: <https://paciowg.github.io/del/>
 - Hosted Reference Implementations
 - Server: <https://api.logicahealth.org/PACIO/>
 - Client: <https://deldemo.herokuapp.com>
 - Reference Implementation Code (Apache 2.0 license)
 - Server: <https://github.com/paciowg/del>
 - Client: <https://github.com/paciowg/delDemo>
 - Test Scripts: <https://github.com/paciowg/inferno>
- **PACIO Functional Status**
 - Implementation Guide: <https://paciowg.github.io/functional-status-ig/>
 - Hosted Reference Implementations
 - Server: <http://hapi.fhir.org/baseR4>
 - Client: <https://snf-transfer-summary.herokuapp.com/>
 - Reference Implementation Code (Apache 2.0 license)
 - Server: <https://github.com/jamesagnew/hapi-fhir>
 - Client: <https://github.com/paciowg/transfer-summary-ri-client>
- **PACIO Cognitive Status**
 - Implementation Guide: <https://paciowg.github.io/cognitive-status-ig/>
 - Hosted Reference Implementations
 - Server: <http://hapi.fhir.org/baseR4>
 - Client: <https://snf-transfer-summary.herokuapp.com/>
 - Reference Implementation Code (Apache 2.0 license)
 - Server: <https://github.com/jamesagnew/hapi-fhir>
 - Client: <https://github.com/paciowg/transfer-summary-ri-client>
- **eLTSS (Electronic Long Term Support and Services)**
 - Implementation Guide: <http://hl7.org/fhir/us/eltss/>
 - Reference Implementation Code: <https://github.com/onc-healthit/eLTSS-reference-implementation>
- **Structured Data Capture (SDC)**
 - Project: <https://www.healthit.gov/topic/scientific-initiatives/pcor/research-evaluation/structured-data-capture-sdc>
 - Implementation Guide: <http://hl7.org/fhir/uv/sdc/2019May/>
- **FHIR Endpoints:**
 - Both endpoints support read/write operations. Please coordinate with the track leads for write operations since different groups may be demonstrating user stories at any point in time.

1 page Cheat Sheet for the Connectathon:

[PACIO-eLTSS cheat sheet for HL7 May 2020 Connectathon_FINAL.pdf](#)

Justification and Objectives

The purpose of this track is to:

- 1) Test integration of CMS assessment data elements from the [Data Element Library \(DEL\)](#) into health IT systems using FHIR APIs.
- 2) Exchange patient level Cognitive and Functional Status data between two disparate health IT (HIT) systems, incorporated with eLTSS care plan and patient goals data, in a consumable format for clinicians, patients, and family members.

[Problem Overview](#)

High quality and timely health information exchange is essential to promote positive health outcomes, reduce provider burden and deliver cost effective healthcare. Acute care settings have made significant strides towards interoperability recently, but post-acute care (PAC) setting still struggle to keep pace with progress toward interoperability.

Despite being excluded from EHR incentive programs, EHR adoption in PAC settings is relatively high. In 2018, ONC released a data brief reporting that 78% of Home Health Agencies (HHAs) and 66% of Skilled Nursing Facilities (SNFs) had adopted EHRs in 2017. (Comparatively, in the same year, 96% of non-federal acute care hospitals had implemented certified EHRs). However, key indicators of interoperability (electronically find, send, receive, and integrate data) remain low in PAC settings.

Considering that 45% of Medicare beneficiaries require (PAC) services after hospitalization, costing taxpayers over \$73 billion dollars annually, the need for a seamless exchange of health information across care settings, and with patients, is significant.

The 2014 [Improving Medicare Post-acute care Transformation Act \(IMPACT Act\)](#) **requires the use of standardized Medicare quality measures and assessment data in PAC settings, and also requires that the standardized data be interoperable. The intent of the IMPACT Act is to:**

- Support access to longitudinal information to help inform clinical decision making and promote coordinated patient care
- Enable data comparison across healthcare settings
- Improve discharge planning and health information exchange

In response to IMPACT requirements, CMS developed standardized patient assessments in specific categories, including assessments for functional status and cognitive status, which are used across multiple care settings for quality measurement, payment, survey and certification, and public reporting. In addition, providers can use these standardized data elements, and their mappings to HIT standards (e.g.- LOINC, SNOMED-CT), to support quality improvement efforts, care planning, and for health information exchange when a person transitions between healthcare settings, including hospitals, outpatient services, home and community based services, PAC settings (Hospices, Home Health Agencies (HHA), Inpatient Rehabilitation Facilities (IRF), Long-term care Hospitals (LTCH), Skilled Nursing Facilities), and others. CMS assessment data elements are not limited to PAC settings; other healthcare settings outside of PAC also can use them to improve care.

Post-acute care (PAC) providers are required to submit patient data to CMS for all patients using specific CMS assessments, at both admission and discharge, and at other points in between. These assessments include administrative and clinical data elements, which are used for quality measurement, payment, survey and certification, and public reporting. In addition, providers can use the data elements found within CMS assessments to support quality improvement efforts, care planning, and for health information exchange when a person transitions between healthcare settings, including hospitals, outpatient services, home and community based services, PAC settings (Hospices, Home Health Agencies (HHA), Inpatient Rehabilitation Facilities (IRF), Long-term care Hospitals (LTCH), Skilled Nursing Facilities), and others. CMS assessment data elements are not limited to PAC settings; other healthcare settings outside of PAC also can use them to improve care.

CMS created the DEL to support standardization and interoperability of patient assessment data elements found on the following CMS assessments:

- Inpatient Rehabilitation Facility Patient Assessment Instrument (IRF-PAI)
- Long-Term Care Hospital Continuity Assessment Record & Evaluation (CARE) Data Set (LCDS)
- Resident Assessment Instrument (RAI) Minimum Data Set (MDS)
- Outcome and Assessment Information Set (OASIS)

The CMS DEL is the centralized repository of CMS assessment questions and response options (data elements), along with their related mappings to nationally accepted health IT standards (e.g. LOINC, SNOMED-CT), to support electronic data exchange to improve care coordination, health outcomes, and healthcare efficiencies.

Interoperability challenges persist across the healthcare ecosystem. Providers are not receiving complete and accurate information in a timely manner, leading to adverse outcomes and additional expenses. Failure to exchange accurate, timely data often leads to inefficient workflows, duplicative data entries, and increased risk of patient harm attributable to missing or inaccurate information. HIT can significantly alleviate administrative burden by supporting health information exchange across care settings to ensure that the relevant information necessary to care for the incoming patient is delivered to the right person, at the right time- therefore improving patient outcomes, reducing provider burden, improving cost efficiencies, and improving workflows. Moreover, enhanced data exchange would allow for advanced computability, standardization, usability, and real-time data analytics, enabling broader data use by health IT developers, researchers, providers, and payers.

To incrementally further the goal of cross-setting interoperable data exchange, CMS prioritized cognitive and functional status as an area of clinical importance in need of standardization. CMS created a set of questions and responses addressing cognitive and functional status with corresponding LOINC/SNOMED codes that is standardized across all PAC settings. Members of the PACIO Project, a collaborative effort to advance interoperable health data exchange between PAC providers, patients, and other key stakeholders, worked with CMS to develop an IG for exchange of cognitive status data elements starting with the short Confusion Assessment Method (CAM). PACIO selected short CAM data elements because exchanging this information quickly and efficiently is essential to ensuring a person's safe transition from one healthcare setting to another. Additionally, the interoperable exchange of short CAM elements paves the way for semantic interoperability, because those data elements are represented the same way in each PAC assessment.

The PAC Transition Summary connectathon track will allow us to confirm the quality of the PACIO Functional Status, Cognitive Status, and CMS Data Element Library IG materials, gain experience with testing, and show us where additional revisions to the IGs may be helpful for implementers.

This track will use [what](#) version of FHIR.

This track will use version R4 of FHIR.

Clinical input requested (if any)

CMS assessments are developed by CMS with guidance from multiple sources, including clinical subject matter experts, measure developers, and others. While CMS is not seeking clinical input for assessment content as part of this Connectathon, clinical input is welcome regarding the process of integrating CMS assessment content into clinical IT workflows. Members of the [Post-Acute Care Interoperability \(PACIO\) Project](#), including CMS and MITRE, with clinical experience will be present to discuss which key cognitive status data elements they have identified to be exchanged during transitions of care, but validation by a wider clinician audience of connectathon participants would be beneficial.

Related tracks

Coordinated Care Track - this effort is part of a broader use case for the Coordinated Care Track

Proposed Track Leads

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Dave Hill	dwhill@mitre.org
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Expected participants

20 participants, including CMS, ONC, Telligen, Lantana, Patient Centric Solutions, eLTSS, Altarum, MITRE

Communications Channels for Track Participants

Zulip #Post-Acute Care (communicate here when discussing anything related to the Implementation Guide (IG), Reference Implementation (RI) or for general track discussions)

<https://chat.fhir.org/#narrow/stream/208867-Post-Acute-Care>

Slack #general (communicate here when discussing administrative items, logistical items and for cross track coordination)

pacioproject.slack.com

JIRA (communicate here when recording and addressing bugs and issues in the IG/RI only)

<https://jira.hl7.org/>

Track Orientation

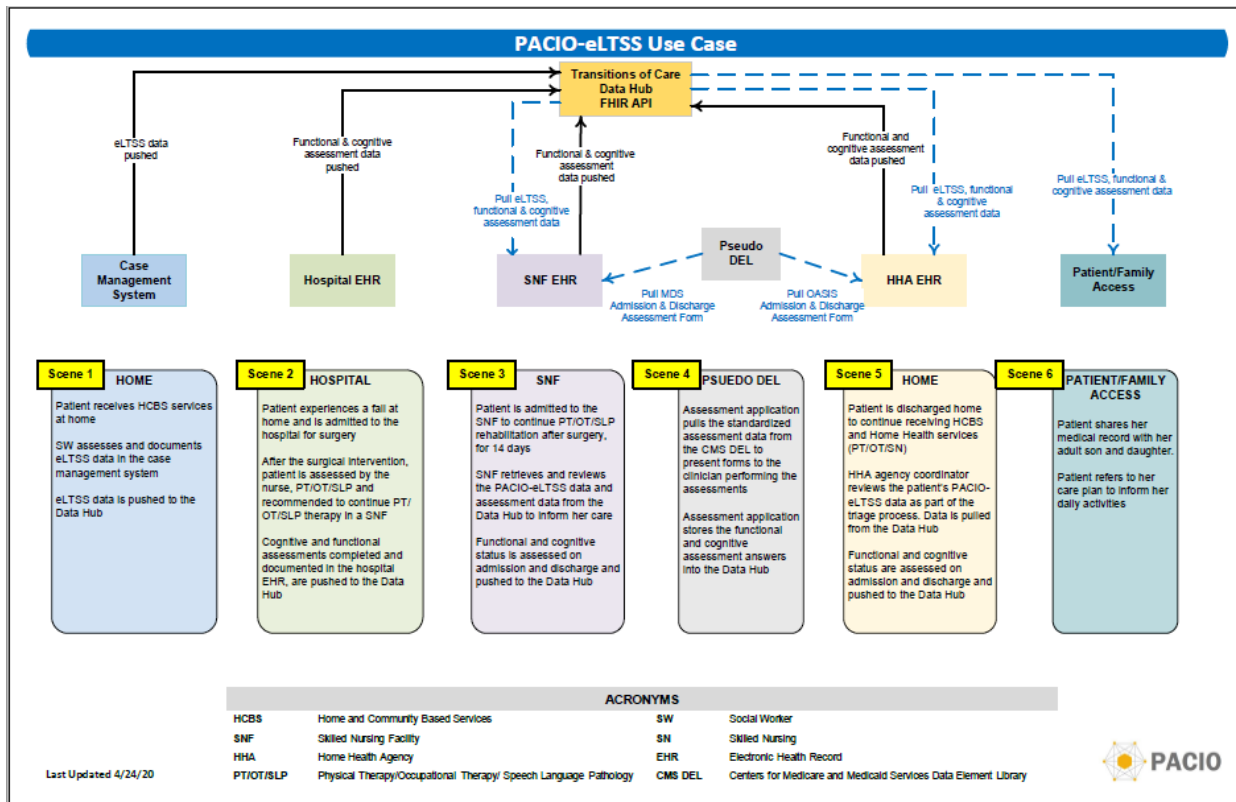
A [webinar](#) was hosted on **Thursday April 30th, 2020 03:00 PM - 04.00 PM (EST) via Zoom**

Track Schedule

All times are Eastern U.S.

Day 1: Wednesday, May 13	4:30pm – 5pm: Track Kickoff <ul style="list-style-type: none">• Introductions• Review track goals,• Review track schedule
Day 2: Thursday, May 14	9am – 3pm: Collaboration <ul style="list-style-type: none">• Smoke test whole sequence• Identify priorities to address today• Test, code, monitor progress 3pm – 5pm: Prepare for demos <ul style="list-style-type: none">• Final adjustments, dry-run
Day 3: Friday, May 15	9am – 2pm: Record demos <ul style="list-style-type: none">• Use Zoom 2pm – 6pm: Report out

Use Case



The use case starts with the patient (Ms. Betsy Smith Johnson) receiving Home and Community Based Services (HCBS) in her home. A social worker documents eLTSS data including care plan and goals. Patient experiences a fall at home and is admitted to the hospital for surgery.

After the surgical intervention, patient is assessed by Physical, Occupational and Speech Language Pathology therapists (PT/OT/SLP) and is recommended to continue her therapy in a Skilled Nursing Facility (SNF). Cognitive assessments are completed during the hospital encounter and pushed to the Data Manager.

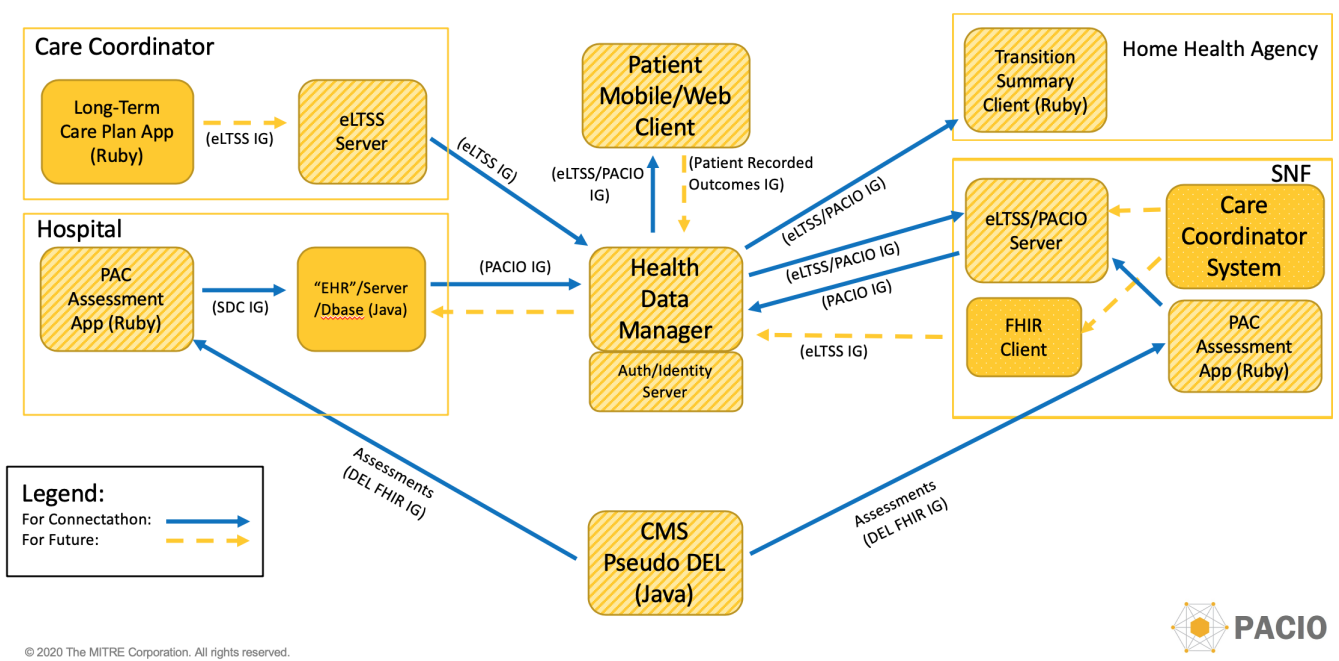
Ms. Smith is admitted to the SNF for PT/OT/SLP services. The SNF retrieves the eLTSS data and hospital assessment data from the Data Manager to inform her care. The assessment application pulls the standardized assessment data from the CMS DEL and presents forms to the clinician performing the admission and discharge assessments. The clinicians document the SNF admission and discharge information, with the functional and cognitive assessment data being pushed to the data manager. After 14 days, patient is ready for her discharge back home.

Once the patient returns home to continue home health services from the Home Health Agency (HHA) and HCBS, patient and her family can access the eLTSS data and assessment data through a patient mobile/web application for their review.

System Roles

Role	Description
<i>Data Element Library (DEL)</i>	Provides CMS standardized assessment data elements via FHIR API
<i>Case Management System/ Care Coordinator</i>	<ul style="list-style-type: none"> <i>Long-Term Care Plan App</i> - captures care plan and goals for the patient <i>eLTSS Server</i> - FHIR-based HIT system that contains the eLTSS care plan and goals for the patient and pushes that data to the Data Manager using the eLTSS IG.
<i>Care Setting A: Hospital</i>	<ul style="list-style-type: none"> <i>PAC Assessment Application</i> - FHIR-based assessment application that retrieves the standardized assessment data elements from the DEL and captures the cognitive and functional status data for the patient. <i>"EHR"/Server/Database</i> - FHIR-based HIT system storing cognitive and functional status data from the assessment application for the patient and pushes that data to the Data Manager using the PACIO Functional Status and PACIO Cognitive Status IGs.

Health Data Manager	<ul style="list-style-type: none"> FHIR-based HIT system that collects data from the Care Coordinator and Healthcare Setting A using the eLTSS and PACIO Functional Status and PACIO Cognitive Status IGs. Authorization/Identity Server - handles authentication and identity management
Care Setting B: SNF	<ul style="list-style-type: none"> PAC Assessment Application - FHIR-based assessment application that retrieves the standardized assessment data elements from the DEL and captures the cognitive and functional status data for the patient. eLTSS/PACIO Server - Client HIT system to receive patient's eLTSS, cognitive and functional status data from the Data Manager system
Care Setting C: HHA	<ul style="list-style-type: none"> Care Coordinator System - updates the care plan and goals eLTSS/PACIO Server - Client HIT system to receive patient's eLTSS, cognitive and functional status data from the Data Manager system, for display to receiving clinician
Patient/Family Mobile /Web Client	FHIR-based web/mobile application that is able to receive patients' eLTSS, cognitive and functional status data from the Data Manager for display to a patient or family member.



Scenarios

Precondition:

Scenario 1/Scene 1: Social Worker (SW) creates care plan and goals for Ms. Smith Johnson and pushes the care plan and goals (eLTSS data) to the Data Manager.

Scenario 2/Scene 2: The Hospital performs cognitive and functional assessments on Ms. Smith Johnson using the assessment application. The assessment application pulls the standardized assessment data from the CMS Data Element Library (DEL) to present forms to the clinician performing the assessments. The assessment application pushes assessments through Structured Data Capture into the data store at the Hospital. EHR/Database System pushes assessments to the Data Manager

Scenario 3/Scene 3: The SNF clinicians retrieve and review the eLTSS data and assessment data from the Data Manager to inform her care. The SNF discharges Ms. Smith Johnson and pushes the cognitive and functional assessments to the Health Data Manager.

Scenario 4/Scene 4: The HHA admits Ms. Smith Johnson. The HHA is able to retrieve the data for care plan, goals, functional and cognitive assessments performed at the hospital and SNF from the Data Manager.

Scenario 5/Scene 5: Mobile/web consumer-facing application accessible by Ms. Smith Johnson or her designated proxy/caregiver/family member can access care plan, goals, functional and cognitive assessments performed at the Hospital and SNF.

Success Criteria: Successfully transfer of care plan, goals, functional and cognitive assessment data between settings (Hospital, SNF, Home) and with consumers, in a manner that is consumable by clinicians and consumers.

Bonus 1: Healthcare Setting B discharges Ms. Smith and refers her to Healthcare Setting C. Healthcare Setting C and its retrieves care plan, goals, functional and cognitive assessments performed at Healthcare Setting A and Healthcare Setting B from the Health Data Manager.

Bonus 2: Healthcare Setting B pushes updated care plan, goals, functional and cognitive assessments performed at Healthcare Setting B to the Data Manager. Healthcare Setting A retrieves the updated care plan, goals, functional and cognitive assessments performed at Healthcare Setting B from the Health Data Manager.

Bonus 3: The assessment application stores the HHA functional and cognitive assessment answers into the Data Manager

TestScript(s)

Testing will be done through [ONC Inferno](https://github.com/paciowg/Inferno). Test scripts can be found at <https://github.com/paciowg/Inferno>

Test cases include:

- Verify FHIR server correctly responds to RESTful assessment data requests and queries
- Verify mobility assessments contain the required and conditionally recommended data in required data sets

Security and Privacy Considerations

Clients and servers shall support SMART on FHIR security protocols, although this track will not use any PII/PHI, only synthetic data.