PACIO Integration of Post-Acute Care

HL7 FHIR Connectathon 30
Track Info Session

Karl Naden, Dr. Lynda Hoeksema
04/27/2022
Track Lead Introduction

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Agenda

• PACIO Background Information
• Track Overview
• Use Case
• Technical Overview
• Track Schedule
• Next Steps
Primary goal:

Since its inception on February 24, 2019, the PACIO Project endeavors to establish a framework for the development of a Fast Healthcare Interoperability Resource (FHIR) technical implementation guide and Reference Implementation that will facilitate health information exchange (HIE) through standards-based application programming interfaces (APIs).

Purpose:

Consensus-based approach to advance interoperable health information exchange (HIE) between post-acute care providers, patients, and other key stakeholders across health care and to promote HIE among policy makers, standards organizations, and industry, through open source FHIR IGs and vendor-based reference implementations.

Problem Statement:

Care coordination, when a person transitions between healthcare settings, including ambulatory care, acute care, long term post-acute care (LTPAC), and home & community-based services (HCBS), often is fragmented and can lead to poor health outcomes, increased burden and increased costs. Interoperable health information exchange has the potential to improve patient and provider communications and supports access to longitudinal health information that enables improved efficiencies, improved quality of care, and improved health outcomes. Data should be usable across the continuum of care, and beyond the traditional healthcare system – into the community.
PACIO Project Implementation Guide (IG) Goals:

Profiling FHIR resources to:

• SPLASCH - represent data regarding a patient’s communication, cognition, hearing, and swallowing function.

• Advance Directive Interoperability (ADI): represent advance directive content such as: living will, durable medical power of attorney, personal health goals at end of life, care experience preferences, patient instructions (obligation, prohibitions, and consent), and portable medical orders for life sustaining treatments.

• Re-assessment Timepoint: create a definition for sub-periods of time within an extended post-acute admission (PAC); provide a way to break information into consumable blocks that can reflect the evolution of care over time in a PAC Admission.

• Functional Performance: represent data regarding a patient’s functional and cognitive status.
Track Goals

• Demonstrate 9 FHIR IGs working together to allow data to follow a patient and be available for use at all points of care.

• Create, exchange, and query information between disparate health IT (HIT) systems, in a consumable format for clinicians, patients, and family members.

• Test the expanded SPLASCH IG

• Test the new PACIO Functional Performance IG which uses a new framework to combine the published PACIO Functional Status and Cognitive Status IGs
Track Resources

PACIO Integration of Post-Acute Care IGs Track

• Track Page: https://confluence.hl7.org/display/FHIR/2022-05+PACIO+Integration+of+Post-Acute+Care+IGs

• Zulip Stream: https://chat.fhir.org/#narrow/stream/208867-Post-Acute-Care

• Connectathon Manager: http://conman.clinfhir.com/?event=con30
Track Resources continued

• Implementation Guides:
  – PACIO SPLASCH (https://paciowg.github.io/splasch-ig/)
  – PACIO Advance Directives (http://hl7.org/fhir/us/pacio-adi/2022Jan/)
  – PACIO Re-Assessment Timepoints (http://hl7.org/fhir/us/pacio-rt/2022Jan/)
  – eLTSS Care Plan (http://hl7.org/fhir/us/eltss/)
  – Gravity SDOH Clinical Care (http://build.fhir.org/ig/HL7/fhir-sdoh-clinicalcare/)

• Coordination IGs
  – Patient Data Receipt (https://open-health-manager.github.io/patient-data-receipt-ig/)
Meet Betsy

- Retired, 68-year-old white female
- Moved from Maryland to Texas
- Widow who lives alone, and has 2 adult children; her son in Michigan assists with her healthcare decisions
- Social Security is her primary source of income

Medical History
- Hypertension
- Depression
- Hyperlipidemia
- Cataracts
- Stage III Chronic Kidney Disease
- Osteoarthritis
- Ischemic Heart Disease
- Type II Diabetes

Medications
- Lisinopril 40mg twice daily
- Atorvastatin 40mg nightly
- Calcium 500mg daily
- Sertraline 25mg nightly
- Metformin 500mg daily
- Vitamin D 800IU daily
- Tylenol 650mg every 6 hours or as needed
- Furosemide 20mg daily
- Ferrous Sulfate 325mg three times a day prior to meals
<table>
<thead>
<tr>
<th>Scene</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>Betsy's prior care history, care preferences, medications, problems, allergies, advance directive information and diabetes care plan are available via Betsy's Health Manager.</td>
</tr>
<tr>
<td>1</td>
<td>Home - TX</td>
<td>Betsy can care for herself in her home with assistance from Long-term Services and Support. Her hearing has been getting worse over the past few months, so she is evaluated for hearing aids.</td>
</tr>
<tr>
<td>2</td>
<td>Hospital - TX</td>
<td>After she experiences right side weakness and slurred speech, Betsy is taken to the hospital, where she is diagnosed and treated for a stroke. Once stabilized, she is discharged to a Skilled Nursing Facility (SNF).</td>
</tr>
<tr>
<td>3</td>
<td>SNF- TX</td>
<td>Betsy receives post-acute care in a SNF to continue her stroke recovery with rehab from a multidisciplinary team. A few weeks in she experiences an ankle injury which temporarily impacts her mobility. After Betsy regains enough independence, she is discharged to her home, where a Home Health Agency (HHA) will provide her care.</td>
</tr>
<tr>
<td>Scene</td>
<td>Setting</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4</td>
<td>HHA - TX</td>
<td>Betsy continues her stroke recovery at home with the help of an HHA. Her diabetes flares up again, requiring additional visits to her PCP's office, for which she needs help with transportation.</td>
</tr>
<tr>
<td>5</td>
<td>Home - MI</td>
<td>Now that she has completed her stroke recovery, Betsy travels to Michigan to visit her son Charles and his family for an extended holiday. While there, she decides to update her Advance Directive information. She changes her 1st alternate health care agent and updates her Personal Advance Care Plan, expressing her wish for her grandchildren to be allowed to visit either in person or virtually.</td>
</tr>
<tr>
<td>6</td>
<td>Primary Care Provider - MI</td>
<td>Because she plans to start spending more time with Charles and his family in Michigan, Betsy decides to establish care with a PCP in Michigan. Betsy grants permission for her daughter Debra in Texas to access her records to stay informed of her care.</td>
</tr>
</tbody>
</table>
Scene Timeline: 1-3

Scene 1
- Receives Hearing Aid
- Stroke Symptoms

Scene 2
- Emergency Thrombectomy

Scene 3
- Ankle Injury
- SNF Days 3-14
- SNF Days 15-36
Use Case Overview: Scenes 0-3

Key People
- Betty (Patient)
- Charles in MI (Son-in-law)
- Lisa in MI (Daughter-in-law)
- Donna in TX (Daughter)
- Multidisciplinary Care Teams
- Individual Clinicians

Key Data Pre-Populated
- Conditions (Problems) & Health Concerns
- Medications, Allergies, Blood Pressure, Hemoglobin A1C results
- Advance Directive Information
- Diabetes Care Plan
- eLTSS Care Plan
- Prior cognitive, functional, SPLASCH data describing functioning level

Key Systems Pre-Populated
- Health Data Manager Server
- Pseud DEI Server
- ACO eCQM Server
- AGI Server
- Care Plan Server: MCC
- Care Plan Server: LTSS
- SDOH Reference Implementation Server

Key: Arrow direction refers to direction of data flow
- Solid Arrow: Plan to demonstrate.
- Dashed Arrow: Potential plan to demonstrate.
- Intermittent Arrow: Not planned to demonstrate. Sample data present.
Use Case Overview: Scenes 4A-4D
Use Case Overview: Scenes 5 & 6
Data Flow Diagram
SPLASCH IG Overview

https://paciowg.github.io/splasch-ig/

This PACIO SPLASCH implementation guide describes a means for exchanging observations related to patients’ Speech, Language, Swallowing, Cognitive Communication, and Hearing abilities across various care settings.

1.1 Introduction
This project will identify the data elements regarding eating, swallowing, and functional communication that need to be captured and exchanged across transitions of care in health care settings, based on the framework for the International Classification of Functioning, Disability, and Health (ICF). Examples may include:

- Learning and applying knowledge
  - Patient is unable to read and/or comprehend/retain awareness of complex content in documents or through conversation (such as financial or medical materials).
- Reforming general tasks and demands
  - Patient requires assistance with simple and complex living tasks such as meal preparation and basic and/or complex activities of daily living.
- Communicating with others
  - Patient is unable to independently communicate in high demand situations (such as an emergency phone call).
  - Patient is unable to produce intelligible words/phrases to unfamiliar listeners.
  - Patient requires excessive effort and strain to vocalize.
  - Patient requires technology for communication (i.e., hearing aids and/or speech generating devices).
- Performing self-care activities related to eating and drinking
  - Patient requires supervision, assistance, and/or diet modification with all meals related to the patient’s ability to swallow independently.

1.2 Background
To achieve objectives listed above, this project will:
- Develop FHIR implementation guide(s) (multiple guides may be necessary depending upon what data is identified as required and how that data should be organized for best capture and exchange).
- Develop reference implementations, as needed.
- Coordinate updates of existing PACIO IDs or suggest revisions for other related IDs, as needed, and
- Revise and refine existing profiles and localize and adapt other profiles for our use, as needed.
Functional Performance IG Overview

https://paciowg.github.io/functional-performance-ig/

Functional Performance Value Set:

Sample Data

- **Track leads**: ask if you need something specific!

- **PACIO GitHub**: repository for Connectathon sample data, where scenario data is being built
  - Per-IG resources: https://github.com/paciowg/sample-data/tree/master/2022-05%20HL7%20May%20Connectathon/IndividualIGs

- **HAPI FHIR Test Server**: example patients on a public server
  - Patient with examples of most IG’s (data not sensical): http://hapi.fhir.org/baseR4/Patient/BSJ-C0522-Incoherent/$everything
  - Proposed scenario eLTSS data: http://hapi.fhir.org/baseR4/Patient/PMC-eLTSS-patientBSJ1/$everything

- **Individual IGs**: conformant samples, not necessarily related to the track scenario
Known Participants

- ADVault
- Altarum
- Care Nexus
- Gravity
- MCC Care Plan
- MITRE: PACIO, Abacus (Quality Measurement), Open Health Manager
- Patient Centric Solutions
## System Roles / Known Participants

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Scenes</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Data Manager Repository Server</td>
<td>Patient-owned central repository for their health data</td>
<td>All</td>
<td>MITRE Open Health Manager</td>
</tr>
<tr>
<td>Clinician Viewer (Read Only)</td>
<td>Clinician-facing portal supporting the display of relevant information about the patient's care, including any or all of: Advance Directive information, Care Plans (eLTSS, MCC), Functional, Cognitive, and SPLASCH observations, Re-Assessment Timepoints, SDOH data</td>
<td>Many</td>
<td>Patient Centric Solutions MCC client Gravity Client MITRE Pseudo EHR Care Nexus</td>
</tr>
<tr>
<td>Patient Viewer (Read Only)</td>
<td>Patient- and Family-facing app supporting the display of relevant information about the patient's health, including any or all of: Advance Directive information, Care Plans (eLTSS, MCC), Functional, Cognitive, and SPLASCH observations, Re-Assessment Timepoints, SDOH data</td>
<td>Many</td>
<td>Patient Centric Solutions MCC client Gravity Client MITRE Pseudo EHR Care Nexus</td>
</tr>
<tr>
<td>Care Plan Data Repository Server</td>
<td>Server storing Care Plan (eLTSS and MCC) data</td>
<td>4C, 4D</td>
<td>Altarum MCC Care Plan Server</td>
</tr>
</tbody>
</table>
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<tbody>
<tr>
<td>LTSS EHR</td>
<td>Portal allowing a social worker to document long-term services and support care plans and interventions</td>
<td>4D</td>
<td>Care Nexus MITRE Pseudo EHR</td>
</tr>
<tr>
<td>MCC Care Plan Input (Capture)</td>
<td>Process for manually feeding in Care Plan data</td>
<td>4C</td>
<td>CareNexus</td>
</tr>
<tr>
<td>Advance Directive Server</td>
<td>Server accepting Advance Directive information as CDA, converting to FHIR and pushing to Health Data Manager</td>
<td>5</td>
<td>ADVault</td>
</tr>
<tr>
<td>SDOH Client</td>
<td>User-facing client capable of capturing and displaying social determinants of health data. Captured data sent to Health Manager for storage.</td>
<td>4B</td>
<td>HealthLX</td>
</tr>
</tbody>
</table>
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</thead>
<tbody>
<tr>
<td>DEL Server</td>
<td>Server providing FHIR-based access to the public CMS Data Element Library data</td>
<td>2, 3</td>
<td>MITRE Pseudo DEL</td>
</tr>
<tr>
<td>Assessment Application (Capture)</td>
<td>Clinician-facing client allowing users to select and complete CMS-mandated assessments by pulling details from the Pseudo DEL</td>
<td>2, 3</td>
<td>MITRE Assessment App</td>
</tr>
<tr>
<td>Hospital EHR</td>
<td>Client/Server storing and allowing interaction with observations and other data related to treatment in acute settings</td>
<td>2</td>
<td>MITRE Pseudo EHR</td>
</tr>
<tr>
<td>Skilled Nursing Facility (SNF) EHR</td>
<td>Client/Server storing and allowing interaction with observations and other data related to treatment in post-acute settings, such as skilled nursing facilities</td>
<td>3</td>
<td>MITRE Pseudo EHR</td>
</tr>
<tr>
<td>Home Health Agency (HHA) EHR</td>
<td>Client/Server storing and allowing interaction with observations and other data related to treatment in home health settings</td>
<td>4</td>
<td>MITRE Pseudo EHR</td>
</tr>
<tr>
<td>eCQM Server</td>
<td>Server evaluating care gaps</td>
<td>4A</td>
<td>MITRE Abacus (Quality Measurement)</td>
</tr>
</tbody>
</table>
Testing with Inferno

- Open Source FHIR® Testing
  - Is a streamlined FHIR Server testing tool that is use-case / implementation guide focused
  - Supports the creation of automated tests through Implementation Guide Capability Statements
  - Makes it easier to write or reuse tests assessing conformance to other FHIR Implementation Guides with flexibility to test non-FHIR requirements
  - Is sponsored by the Office of the National Coordinator
  - Acts as a client to validate that servers adhere to SMART on FHIR and FHIR Implementation Guide requirements
  - Can write custom tests in Ruby

https://inferno.healthit.gov/
## Track Schedule: May 3, 2022 (Tuesday)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time EDT</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/03/2022</td>
<td>9.30am-10.00am</td>
<td>Introductions/Track Overview</td>
</tr>
<tr>
<td>05/03/2022</td>
<td>10.00am-11.30am</td>
<td>Implementation Guide Review</td>
</tr>
<tr>
<td>05/03/2022</td>
<td>11.30am-12.00pm</td>
<td>BREAK</td>
</tr>
<tr>
<td>05/03/2022</td>
<td>12.00pm-1.45pm</td>
<td>Build / Test / Validate</td>
</tr>
<tr>
<td>05/03/2022</td>
<td>1.45pm-2.00pm</td>
<td>BREAK</td>
</tr>
<tr>
<td>05/03/2022</td>
<td>2.00pm-3.00pm</td>
<td>Build / Test / Validate</td>
</tr>
<tr>
<td>05/03/2022</td>
<td>3.00pm-4.00pm</td>
<td>Practice Implementer Demos</td>
</tr>
<tr>
<td>05/03/2022</td>
<td>4.00pm-4.30pm</td>
<td>Wrap Up</td>
</tr>
</tbody>
</table>
# Track Schedule: May 4, 2022 (Wednesday)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time EDT</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/04/2022</td>
<td>9.30am-10.30am</td>
<td>Implementer Demos</td>
</tr>
<tr>
<td>05/04/2022</td>
<td>10.30am-11.30pm</td>
<td>Create Track Report Slides / Backup Demo recording time</td>
</tr>
<tr>
<td>05/04/2022</td>
<td>11.30pm-12.15pm</td>
<td>BREAK</td>
</tr>
<tr>
<td>05/04/2022</td>
<td>12.15pm-12.25pm</td>
<td>PACIO SPLASCH Track Highlight (See Track Highlight Session in Whova)</td>
</tr>
<tr>
<td>05/04/2022</td>
<td>1.00pm-2.15pm</td>
<td>Backup Demo (This time serves as a placeholder for additional demo recordings if needed.)</td>
</tr>
</tbody>
</table>
NEXT STEPS
Participant Checklist

Done:
✓ Complete Connectathon registration (closed April 18, 2021)
✓ Complete the HL7 Pre-Connectathon Survey to designate which track you plan to participate in
✓ Attend HL7 FHIR Connectathon Basic Training (required for 1st time connectathon attendees)
✓ Attend PACIO Integration Track Kick Off (April 27)

To Do?
❑ Create a Whova Account (once receive invitation)
❑ Join the PACIO-Post-Acute Care Zulip Stream
❑ Review the Connectathon Track List and visit Track Pages to learn more
❑ Read the Connectathon version of the FHIR Specification to become familiar with FHIR concepts
❑ If you plan to test, enter your information in Connectathon Manager (ConMan)
  ❑ Instructional video available: How to use ConMan
Whova Tips

- Use **Chrome** or **Safari** to access through **Web app**
- **Must** use the **same** email address used for Connectathon registration
- [Whova for Connectathon Participants](#) video recording for additional guidance (48 minutes)
- For technical support contact: **HL7Connectathon@HL7.org**
QUESTIONS
SEE YOU ON MAY 3RD!