Track Leads

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- Jamila Harley  jharley@asha.org
Established February 2019, the PACIO Project is a collaborative effort between industry, government and other stakeholders, with the goal of establishing a framework for the development FHIR implementation guides to facilitate health information exchange.

http://pacioproject.org
SPLASCH (Speech, Language, Swallowing, Cognitive Communication, and Hearing)

The PACIO SPLASCH subgroup's goal is to profile existing FHIR resources to represent data regarding a patient’s communication, cognition, hearing, and swallowing function to improve transitions of care.
Welcome Track Participants!
<table>
<thead>
<tr>
<th>Date</th>
<th>Time EST/(CST)</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/11/2021</td>
<td>9.30am-10.00am (8.30am-9.00am CST)</td>
<td>Introductions/Track Overview</td>
</tr>
<tr>
<td>1/11/2021</td>
<td>10.00am-11.30am (9.00am-10.30am CST)</td>
<td>Implementation Guide Review</td>
</tr>
<tr>
<td>1/11/2021</td>
<td>11.30am-12.00pm (10.30am-11.00am CST)</td>
<td>BREAK</td>
</tr>
<tr>
<td>1/11/2021</td>
<td>12.00pm-2.00pm (11.00am-3.00pm CST)</td>
<td>Build / Test / Validate</td>
</tr>
<tr>
<td>1/11/2021</td>
<td>2.00pm-2.15pm (1.00pm-1.15pm CST)</td>
<td>BREAK</td>
</tr>
<tr>
<td>1/11/2021</td>
<td>2.15pm-4.00pm (1.15pm-3.00pm CST)</td>
<td>Build / Test / Validate</td>
</tr>
<tr>
<td>1/11/2021</td>
<td>4.00pm-4.30pm (3.00pm-3.30pm CST)</td>
<td>Wrap Up</td>
</tr>
</tbody>
</table>
TRACK OVERVIEW
Track Introduction

PACIO SPLASCH Track

• Track Page: [https://confluence.hl7.org/display/FHIR/2022-01+PACIO+SPLASCH](https://confluence.hl7.org/display/FHIR/2022-01+PACIO+SPLASCH)

• Implementation Guide: [https://paciowg.github.io/splasch-ig/](https://paciowg.github.io/splasch-ig/)

• Zulip Stream: [https://chat.fhir.org/#narrow/stream/305997-PACIO-SPLASCH](https://chat.fhir.org/#narrow/stream/305997-PACIO-SPLASCH)

• ConMan: [http://conman.clinfhir.com/connectathon.html?event=con29](http://conman.clinfhir.com/connectathon.html?event=con29)
Track Goals

- Orient participants to the SPLASCH Implementation Guide (IG), references and profiles.
- Exchange and query speech comprehension, expression and swallowing deficit information between disparate health IT (HIT) systems, in a consumable format for clinicians, patients, and family members.
- Test the PACIO SPLASCH Implementation Guide (IG).
- Identify IG revisions or clarifications to improve use for implementers.
Implementation Guide Overview

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

1 Home

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 material).

- Performing 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
Reference Implementation

- MITRE Pseudo EHR
  Source code: https://github.com/paciowg/pseudo-ehr
- Open Access Server
  Endpoint: https://gw.interop.community/SPLASCH/open
- SPLASCH Client: https://pseudo-ehr.herokuapp.com/
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/
SESSION BREAK:
NEXT SESSION BEGINS @ 12.00PM ET
BUILD / TEST / VALIDATE
Use Case Overview

**Use Case-Scene 1**
- Social Worker
- Discuss & Documents Care Plan & Goals
- EHR
- LTSS Care Manager
- Health Data Manager (HDM) Repository

**Use Case-Scene 2**
- Multidisciplinary Hospital team
- Hospital EHR
- Health Data Manager (HDM) Repository
- Consumer App
- SPLASCH information accessed by patient and authorized family

**Use Case-Scene 3**
- Multidisciplinary SNF team
- SNF EHR
- Health Data Manager (HDM) Repository
- Consumer App
- SPLASCH information accessed by patient and authorized family

**KEY**
Data flow directions:
# System Roles / Known Participants

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Data Manager Repository Server (Receiver / Custodian)</td>
<td>A system that stores and makes available for query SPLASCH IG conformant FHIR resources. Advance preparation: The system will be able to store SPLASCH resources and make them available for query through a FHIR interface.</td>
<td>Interoperability Institute</td>
</tr>
<tr>
<td>Hospital EHR Client (Creator / Retriever)</td>
<td>A system that, in this scenario, creates a SPLASCH IG conformant set of FHIR resources, stores, and pushes to the SPLASCH information repository. Advance preparation: The system will have the ability to create SPLASCH IG conformant FHIR resources.</td>
<td>MITRE Reference Implementation / Pseudo EHR client</td>
</tr>
<tr>
<td>Skilled Nursing Facility EHR Client (Creator / Retriever)</td>
<td>A system that, in this scenario, queries a SPLASCH information repository for SPLASCH FHIR resources, and displays or otherwise uses the information contained within. Advance preparation: The system will have the ability to query for SPLASCH resources through a FHIR interface.</td>
<td>MITRE Reference Implementation / Pseudo EHR client</td>
</tr>
<tr>
<td>Consumer Client (Retriever)</td>
<td>A system that queries a SPLASCH information repository for SPLASCH FHIR resources and displays or otherwise uses the information contained within. Advance preparation: The system will have the ability to query for SPLASCH resources through a FHIR interface.</td>
<td>MaxMD</td>
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</tbody>
</table>
Scene 2 Overview

Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>EHR</td>
<td>Electronic Health Record</td>
</tr>
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</tr>
<tr>
<td>LTSS</td>
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</tr>
<tr>
<td>OT</td>
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</tr>
<tr>
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</tr>
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<td>RN</td>
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</tr>
<tr>
<td>STAT</td>
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</tr>
<tr>
<td>SLP</td>
<td>Speech Language Pathologist</td>
</tr>
<tr>
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</tr>
<tr>
<td>SW</td>
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</tr>
<tr>
<td>TPA</td>
<td>Tissue Plasminogen Activator (clot dissolving medicine)</td>
</tr>
<tr>
<td>VFSS</td>
<td>Video Fluoroscopic Swallow Study</td>
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</table>

### SCENE 2: Hospital

**Day 2 (7/7/20):** ED team evaluates and admits Betsy. Neurology consult and imaging studies reveal Betsy has L MCA occlusion (ischemic stroke) but is not a candidate for TPA intervention. Nursing evaluation finds Betsy alert and oriented, but only able to follow basic commands. RN documents Betsy’s speech comprehension, expression, and swallowing deficits and ensures orders are placed for SLP, OT, and PT consults (1930).

**Day 3 (7/8/20):** PT (0800), OT (0840), and SLP (0930) document observations of poor speech comprehension and expression. SLP documents (0930) observations of difficulty swallowing and recommends Video Fluoroscopic Swallow Study (VFSS) for objective evaluation.

**Day 4 (7/9/20):** SLP observes swallowing when VFSS performed (0830). Two hours later (1030), nursing notices Betsy’s condition worsening (complete right sided paralysis, increased slurred speech, difficulty following commands, and difficulty swallowing pills). RN calls neurologist, who conducts STAT imaging. Care team performs an emergent mechanical thrombectomy, resulting in clinical improvement post-procedure.

**Day 5 (7/10/20):** Rehab team provides care.

**Day 6 (7/11/20):** Rehab team completes discharge observations (1200) documenting improved function, but the team recommends rehab in a SNF.

**Day 7 (7/12/20):** Physician documents current speech, language, and swallowing function, medications, and places order for discharge to SNF. While nursing prepares for her discharge, Betsy calls her son, Charles, in Michigan informing him she is moving to the SNF. Charles, her designated Healthcare agent (HCA), accesses from his consumer app the most recent information about his mother’s hospital stay.
Day 7 (7/12/20): Betsy is transported to the SNF. RN verifies presence of PT/OT/SLP evaluation and treatment orders, reviews medications and acute care records. RN (1332), PT (1500), and SLP (1630) document observations of Betsy’s speech comprehension and expression. SLP also documents swallowing observations (1630).

Day 8 (7/13/20): OT (1035) documents observations of speech comprehension and expression.

Days 9-20 (7/14/20-7/25/20): Betsy improves with participation in OT, PT, and SLP therapy.

Day 21 (7/26/20): SLP observes swallowing when VFSS performed (0800). The care team finalizes the SNF stay 14-day progress note and SW initiates a discharge plan.

Day 25 (07/30/20): The rehab team completes the discharge documentation, including the speech, language, and swallowing observations (1515) indicating Betsy’s improvement. The team’s recommendations include home health services and a continuation of her home and community-based services while Betsy returns to her baseline functioning.

Day 28 (7/31/20): SW completes discharge documentation (1020) including current observations of speech, language, and swallowing function. SNF discharges Betsy to her home with a home health nurse visit planned for the next morning. Betsy calls her son Charles to let him know she is now home, and he accesses her SNF stay information from his consumer facing app.

**Scene 3: SNF**

**Acronyms**

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<tr>
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<td>VFSS</td>
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**Use Case - Scene 3**

- Multidisciplinary SNF team
- Betsy (Patient)
- Use Case: SNF team queries HDM for SPLASCH information and adds new data
- SNF team
- Use Case: SNF EHR
- SPLASCH information accessed by patient and authorized family
- Use Case: Health Data Manager (HDM) Repository
- Use Case: Consumer App
Data Flow Diagram

Systems- January Connectathon Focus (Scenes 2 and 3)

Hospital EHR Client (MITRE) → Health Data Manager (HDM) Repository → SNF EHR Client (MITRE)

Creator → Receiver

Retriever → Custodian

Retriever → Creator

Consumer Client (MaxMD) → Health Data Manager (HDM) Repository → Consumer Client (MaxMD)

Retriever → Custodian

Retriever → Creator
SESSION BREAK 2.00PM – 2.15PM
BUILD / TEST / VALIDATE
2.15PM - 4.00PM
WRAP UP 4.00PM – 4.30PM
Accomplishments

• What did we achieve?
  
• What’s on our ‘To Do’ list?
Next Steps
# Track Schedule for January 12th

<table>
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<tr>
<th>Date</th>
<th>Time EST/(CST)</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/12/2021</td>
<td>9.30am-10.30am (8.30am-9.30am CST)</td>
<td>Implementer Demos</td>
</tr>
<tr>
<td>1/12/2021</td>
<td>10.30am-11.30am (9.30am-10.30am CST)</td>
<td>Create Track Report Slides /* Backup Demo recording time</td>
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<tr>
<td>1/12/2021</td>
<td>11.30pm-12.15pm (10.30am-11.00am CST)</td>
<td>BREAK</td>
</tr>
<tr>
<td>1/12/2021</td>
<td>12.15pm-12.25pm (11.15am-11.25pm CST)</td>
<td>PACIO ADI Track Highlight**</td>
</tr>
</tbody>
</table>

* Everyone encouraged to participate
** HL7 FHIR Connectathon 29 Track Highlights session in Whova
## Scene / System Roles

<table>
<thead>
<tr>
<th>Scene</th>
<th>Systems / Roles</th>
<th>Description</th>
<th>Who</th>
</tr>
</thead>
</table>
| Scene 1: Background | LTSS EHR Client (Creator / Retriever)  
Health Data Manager Repository Server (Receiver / Custodian) | Background information only, not tested during this connectathon. | N/A |
## Scene / System Roles

<table>
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</tr>
</thead>
</table>
| Scene 2 Information Created: Document Creation and Sharing | **Hospital EHR Client: (Creator / Retriever)**  
Creates a SPLASCH IG conformant document, stores, and pushes to another system.  
**Health Data Manager Repository Server (Receiver / Custodian)**  
A system that stores and makes available for query, SPLACH IG conformant FHIR resources (and replaces documents appropriately).  
**Consumer Client (Retriever)**  
Mobile/web client to retrieve and display SPLASCH information to patient / family. | 1. Multidisciplinary Hospital Team documents Betsy’s speech comprehension, expression, and swallowing deficits throughout her hospital stay.  
2. Using an app, Betsy’s son Charles accesses information related to her hospital stay. | MITRE  
Pseudo EHR Client  
Interoperability Institute Server: Health Data Manager Repository Server (Receiver / Custodian)  
MaxMD  
Consumer Client (Retriever) |
### Scene 3: Preparation for SNF transfer and SNF Stay

<table>
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<tr>
<th>Scene Systems / Roles</th>
<th>Description</th>
<th>Who</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNF EHR Client (Creator / Retriever)</td>
<td>SNF team queries HDM for SPLASCH information and adds new data</td>
<td>MITRE Pseudo EHR Client (SNF Client)</td>
</tr>
<tr>
<td>Consumer Client (Retriever)</td>
<td>Mobile/web client to retrieve and display SPLASCH information to patient / family.</td>
<td>Interoperability Institute Server: Health Data Manager Repository Server (Receiver / Custodian)</td>
</tr>
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<td>Health Data Manager Repository Server (Receiver / Custodian)</td>
<td>A system that stores and makes available for query, SPLACH IG conformant FHIR resources (and replaces documents appropriately).</td>
<td>MaxMD Consumer Client (Retriever)</td>
</tr>
</tbody>
</table>

1. Betsy is transferred to a SNF, to prepare, the RN uses the SNF EHR to query Betsy’s information from her hospital stay.
2. Multidisciplinary SNF Team documents Betsy’s speech comprehension, expression, and swallowing deficits throughout her SNF stay.
3. Betsy’s son Charles uses a consumer facing app to access her SNF stay information.
HL7 FHIR Connectathon 29
Track Highlights Session

PACIO SPLASCH Track Highlight* – 12:15 – 12:25pm ET

* Search Whova for “HL7 FHIR Connectathon 29 Track Highlights”
REFERENCE SLIDES
Scene 1 Overview (Background)

Day 1 (7/6/20): Betsy Smith-Johnson receives LTSS at her home. Social Work (SW) assesses her and documents a care plan and goals into the community manager EHR. Betsy is functionally independent without the use of assistive devices.

Day 2 (7/7/20): Betsy experiences an acute onset of right sided weakness, partial paralysis of her lower face, blurred vision, and difficulty speaking resulting in slurred speech. She calls 911 for help and an ambulance transports her to the emergency department.

Acronyms
- EHR: Electronic Health Record
- ED: Emergency Department
- HCA: Health Care Advocate
- HHA: Home Health Agency
- LMCA: Left Middle Cerebral Artery
- LTSS: Long Term Support Services
- OT: Occupational Therapy / Therapist
- PT: Physical Therapy / Therapist
- RN: Registered Nurse
- STAT: To be completed immediately
- SLP: Speech Language Pathologist
- SNF: Skilled Nursing Facility
- SW: Social Work/Clinical Social Worker
- TPA: Tissue Plasminogen Activator (clot dissolving medicine)
- VFSS: Video Fluoroscopic Swallow Study

Use Case - Scene 1

Social Worker

Discuss & Documents Care Plan & Goals

Betsy (Patient)

EHR: LTSS Care Manager

Health Data Manager (HDM) Repository

Data flow directions:
**Patient Story Overview**

**SCENE 1: Home with LTSS**

Day 1 (7/6/20): Betsy Smith-Johnson receives LTSS at her home. Social Work (SW) assesses her and documents a care plan and goals into the community manager EHR. Betsy is functionally independent without the use of assistive devices.

Day 2 (7/7/20): Betsy experiences an acute onset of right sided weakness, partial paralysis of her lower face, blurred vision, and difficulty speaking resulting in slurred speech. She calls 911 for help and an ambulance transports her to the emergency department.

**ACRONYMS**

- FHR: Electronic Health Record
- ED: Emergency Department
- HCA: Health Care Advocate
- L: Left
- MCA: Middle Cerebral Artery
- LTSS: Long Term Support Services
- OT: Occupational Therapy/Therapist
- PT: Physical Therapy/Therapist
- RN: Registered Nurse
- SLP: Speech Language Pathologist
- SNF: Skilled Nursing Facility
- SW: Social Work/Clinical Social Worker
- TPA: Tissue Plasminogen Activator (clot dissolving medicine)
- VFSS: Video Fluoroscopic Swallow Study

**SCENE 2: Hospital**

Day 2 (7/7/20): ED team evaluates and admits Betsy. Neurology, consult and imaging studies reveal Betsy has an MCA occlusion (ischemic stroke) but is not a candidate for TPA intervention. Nursing evaluation finds Betsy alert and oriented, but only able to follow basic commands. RN documents Betsy’s speech comprehension, expression, and swallowing deficits and ensures orders are placed for SLP, OT, and PT consults (19:00).

Day 3 (7/8/20): PT (08:00), OT (08:40), and SLP (09:30) document observations of poor speech comprehension and expression. SLP documents (09:30) observations of difficulty swallowing and recommends Video Fluoroscopic Swallow Study (VFSS) for objective evaluation.

Day 4 (7/9/20): SLP observes swallowing when VFSS performed (08:30). Two hours later (10:30), nursing notices Betsy’s condition worsening (complete right sided paralysis, increased slurred speech, difficulty following commands, and difficulty swallowing pills). RN calls neurologist, who conducts STAT imaging. Care team performs an emergent mechanical thrombectomy, resulting in clinical improvement post-procedure.

Day 5 (7/10/20): Reh ab team provides care.

Day 6 (7/11/20): Reh ab team completes discharge observations (11:00) documenting improved function, but the team recommends rehab in a SNF.

Day 7 (7/12/20): Phys ician documents current speech, language, and swallowing function, medications, and places order for discharge to SNF. While nursing prepares for her discharge, Betsy calls her son, Charles, in Michigan informing him she is moving to the SNF. Charles, her designated Healthcare agent (HCA), accesses from his consumer app the most recent information about his mother’s hospital stay.

**SCENE 3: SNF**

Day 7 (7/12/20): Betsy is transported to the SNF. RN verifies presence of PT/OT/SLP evaluation and treatment orders, reviews medications and acute care records. RN (13:32), PT (15:00), and SLP (16:30) document observations of Betsy’s speech comprehension and expression. SLP also documents swallowing observations (18:30).

Day 8 (7/13/20): OT (10:35) documents observations of speech comprehension and expression.

Days 9-20 (7/14/20-7/25/20): Betsy improves with participation in OT, PT, and SLP therapy.

Day 21 (7/26/20): SLP observes swallowing when VFSS performed (08:00). The care team finalizes the SNF stay 14-day progress note and SW initiates a discharge plan.

Day 25 (7/30/20): The rehab team completes the discharge documentation, including the speech, language, and swallowing observations (15:15) indicating Betsy’s improvement. The team’s recommendations include home health services and a continuation of her home and community-based services while Betsy returns to her baseline functioning.

Day 26 (7/31/20): SW completes discharge documentation (10:20) including current observations of speech, language, and swallowing function. SNF discharges Betsy to her home with a home health nurse visit planned for the next morning. Betsy calls her son Charles to let him know she is now home, and he accesses her SNF stay information from his consumer app.
Use Case Overview
Data Flow Diagram

Systems - January Connectathon Focus (Scenes 2 and 3)

**Hospital EHR Client (MITRE)**
- **Creator**
- **Retriever**

**SNF EHR Client (MITRE)**
- **Retriever**
- **Creator**

**Health Data Manager (HDM) Repository**
- **Receiver**

**Consumer Client (MaxMD)**
- **Retriever**

**Consumer Client (MaxMD)**
- **Retriever**
  - **Custodian**